Office of Statewide Health Planning and Development

Medical Information Reporting for California (MIRCal – Phase 1)

Feasibility Study Report

Submitted:
August 13, 1998

Revised: August 26, 1998

Table of Contents

1 EXECUTIVE PROJECT APPROVAL TRANSMITTAL

1.1 Department Name

Office of Statewide Health Planning and Development (OSHPD)

1.2 Project Title

Medical Information Reporting for California – Phase 1, (FSR for SB 1973)

1.3 Project Acronym

MIRCal

1.4 Departmental Priority

Priority: "1"

1.5 Agency Priority

Priority: "1" - California Health Planning and Data Fund

1.6 Approval Signatures

Certification Statement

I am submitting the attached Feasibility Study Report (FSR) in support of our request for the DOIT's approval to undertake this project.

I certify that the FSR was prepared in accordance with State Administrative Manual Sections 4920-4930.1 and that the proposed project is consistent with our information technology strategy as expressed in our current Agency Information Management Strategy (AIMS).

I have reviewed and agree with the information in the attached Feasibility Study Report.

Approval Signatures

_____ _____
Sandra R. Smoley, RN Date
Secretary
Health and Welfare Agency

_____ _____
David Werdegar, MD, MPH Date
Director
Office of Statewide Health Planning & Development

_____ _____
Gregory Roth Date
Chief Deputy Director
Office of Statewide Health Planning & Development

_____ _____
Michael G. Kassis, Deputy Director Date
Healthcare Information Division
Office of Statewide Health Planning & Development

_____ _____
Karen Crouch, Budget Officer Date
Office of Statewide Health Planning & Development

_____ _____
Art Kawada, Manager Date
Information Systems Section

1.7 Y2K Exemption Request

The Office of Statewide Health Planning and Development is aware of the challenges the Year 2000 brings to our information technology systems and the business applications they support. Our Year 2000 (Y2K) program activity status is as follows:

Y2K Executive Sponsor	Scott Gregersen, Deputy Director, Administration					
Y2K Project Manager	Wally Payne			Phone number:	(916) 323-1296	
Y2K Program Phase	Exempt [ ]	Inventory [ ]	Assessment [ ]	Planning [ ]	Implementation & Testing [X]	Finished [ ]
Y2K Project Status	On Schedule (mark one):		[X] YES		[ ] NO	
	If no, explain:					
	On Budget (mark one):		[X]YES		[ ] NO	
	If no, explain:					
Priority of attached FSR/SPR versus Y2K activities		FSR/SPR Priority: 1			Y2K Project Priority: 1	
Explanation of FSR/SPR and business justification						

I certify that there will be no negative impact to our Y2K program activities due to the implementation of the project in the attached FSR/SPR.

_____ _____

David Werdegar, MD, MPH Date

Director

2 Project Summary Package

1.	Electronic Submittal Date	

Project #	
Date Rec'd	
Doc. Type	

		PFSR	FSR	PCR	SPR	PSP	FSR/ER
2.	Type of Document		X				
	Document ID #						

			Estimated Project Dates	
3.	Project Title	Medical Information Reporting for California	Start	End
	Project Acronym	MIRCal – Phase 1	01/01/99	06/30/2001

			Forced Rank Project Priority
4.	Submitting Department	OSHPD	1
5.	Reporting Agency	Health and Welfare Agency	1

6.	Project Objective (brief description, 400 characters]
	This project implements the mandates of SB 1973, which requires OSHPD to improve its current system of collecting, editing, and distributing patient discharge data by: • reducing the time between collection and the availability of the data for public disclosure, • ensuring that the reported data meets OSHPD's accuracy standards, • collecting standardized patient-level data from hospital emergency rooms and free-standing ambulatory clinics, and • expanding the value of the data for public and private uses related to health care, cost containment and quality.

8.	Project Phasing	Budget
	Phase 1	$7,425.8
	Phase 2	To be determined in future FSR
	Phase 3	To be determined in future FSR
	TOTAL PROJECT BUDGET	**$7,425.8**

7.	Proposed Solution (brief description, 400 characters]

The proposed solution will be implemented in three phases consistent with the timeframes specified in SB 1973. This FSR implements Phase 1 which supports SB 1973 objectives including the implementation of reduced reporting and disclosure timeframes and automated acceptance/rejection of reported data. Phases 2 and 3, which will be addressed in subsequent FSRs, will implement full electronic reporting and expansion of the system to include ER and ambulatory data reporting. The proposed strategic architecture for all three phases is based on electronic commerce/electronic data interchange (EC/EDI) and client-server technology, with a web-based reporting component for small hospitals, and data warehouse for data distribution and analysis. Phase 1 of the system provides the foundation for all future phases of the project.

INFORMATION TECHNOLOGY PROJECT SUMMARY PACKAGE
SECTION B: PROJECT CONTACTS

Project #	
Date Rec'd	
Doc. Type	

Executive Contacts								
	First Name	**Last Name**	**Area Code**	**Phone #**	**Ext.**	**Area Code**	**Fax #**	**E-mail**
Agency Secretary	Sandra	Smoley, RN	916					
Dept. Director	David	Werdegar, MD, MPH	916	654-1606				dwerdega@oshpd.cahwnet.gov
Budget Officer	Karen	Crouch	916	654-1846				kcrouch@oshpd.cahwnet.gov
CIO	Art	Kawada	916	323-1405		916	322-1693	akawada@oshpd.cahwnet.gov
Proj. Sponsor	Michael	Kassis	916	324-0017				mkassis@sphpd.cahwnet.gov

Direct Contacts								
	First Name	**Last Name**	**Area Code**	**Phone #**	**Ext.**	**Area Code**	**Fax #**	**E-mail**
Doc. prepared by	Deborah	Holstien	916	323-1407		916	322-1693	DHolstie@OSHPD.cahwnet.gov
Primary contact	Art	Kawada	916	323-1405		916	322-1693	Akawada@OSHPD.cahwnet.gov
Project Manager	Deborah	Holstien	916	323-1407		916	322-1693	DHolstie@OSHPD.cahwnet.gov

INFORMATION TECHNOLOGY PROJECT SUMMARY
SECTION C: PROJECT RELEVANCE TO STATE AND/OR DEPARTMENTAL PLANS

1.	**What is the date of your current Operational Recovery Plan (ORP)?**	**Date**	2/1994
2.	**What is the date of your current Agency Information Management Strategy (AIMS)?**	**Date**	8/1994
3.	**For the proposed project, provide the page reference in your current AIMS and/or strategic business plan.**	**Doc.**	**Business Plan**
		Page #	

Project #	
Date Rec'd	
Doc. Type	

		Yes	**No**
4.	**Is the project reportable to control agencies? (SIMM Volume 1, Policy 5.0)**	X	

If YES, CHECK all that apply:

X	**a) The estimated total development and acquisition cost exceeds the departmental cost threshold.[1]**
X	**b) A new system development or acquisition that is specifically required by legislative mandate or is subject to special legislative review as specified in budget control language or other legislation.[1]**
X	**c) The project involves a budget action.[1]**
	d) Acquisition of any microcomputer commodities and the agency does not have an approved Workgroup Computing Policy (WCP).
	e) Electronic access to private information concerning individuals or entities by entities or individuals other than the entity responsible for data ownership or other entities authorized by law.
	f) Installation or expansion of wide area network data communication facilities or services other than those acquired through contracts administered by the Department of General Services, or a State consolidated data center as defined in SAM Section 4982.
X	**g) Development, acquisition or installation of technologies not currently supported by the department or not currently supported by a State consolidated data center.**
	h) Development and/or purchase of systems to support activities as defined by the DOIT's Enterprise Systems Report.[2]
X	**i) Acquisition or upgrade of a multi-user central processing unit, except for previously approved projects as defined under SAM 4819.2, or servers being used only for departmental Office Automation functions**

[1] The DOIT will forward a copy of the FSR meeting these reporting criteria to the Department of Finance (DOF).

[2] The DOIT will forward a copy of the FSR to the DOF's (CALSTARS Unit) if it is determined the business case or proposed solution is related to financial accounting systems.

Project #	
Date Rec'd	
Doc. Type	

MAJOR MILESTONES

	Description	Planned Delivery Date Relative to Project Start
1.	FSR/BCP Approval	- 4.5 months
2.	IV&V Contract Award	- 3.0 months
3.	RFI Release Date	- 2.0 months
4.	Start Phase 2 & Phase 3 FSR	- 3.0 months
5.	DD&I Vendor contract award	- 0.5 month
6.	Conceptual Design Approval	+ 1.0 month
7.	Complete Phase 2 & Phase 3 FSR	+ 1.5 months
8.	Test System Installation / Acceptance	+ 2.0 months
9.	Submit Phase 2 & Phase 3 FSR to DOIT	+ 2.5 months
10.	Requirements Approval	+ 3.0 months
11.	Submit Phase 2 & Phase 3 FSR + Phase 2 BCP to DOF	+ 4.5 months
12.	Preliminary Design Review / Approval	+ 5.0 months
13.	Critical Design Review / Approval	+ 6.0 months
14.	Approve Test Descriptions	+ 9.0 months
15.	Approve System Test Results	+ 11.0 months
16.	Complete Acceptance Testing	+ 14.0 months
17.	Post Implementation Review	+ 18.0 months

KEY DELIVERABLES

	Description	Planned Delivery Date Relative to Project Start
1.	RFI Document	- 2.0 months
2.	DD&I Proposal Submission	- 1.0 months
3.	Project Management Plan and DD&I Schedule	+ 0.5 month
4.	IV&V Plan	+ 0.5 month
5.	Conceptual Design Documents	+ 0.5 month
6.	System Requirements Specifications	+ 2.5 months
7.	System / Database Design Documents	+ 4.5 months
8.	Critical Design Review	+ 6.0 months
9.	System Test Plan	+ 8.5 months

10.	System Test Results Documentation	+ 10.5 months
11.	System Acceptance Test Plan	+ 11.0 months
12.	Functional and Physical Configuration Audit	+ 14.0 months
13.	Production System	+ 15.0 months
14.	Post-Implementation Evaluation Report…	+ 18.0 months

INFORMATION TECHNOLOGY PROJECT SUMMARY PACKAGE
SECTION E: BUDGET INFORMATION

Project #	
Date Rec'd	
Doc. Type	

Budget Augmentation Required?		
No		
Yes	X	If YES, indicate fiscal year(s) and associated amount:

FY 98/99	FY 99/00	FY 00/01	FY 01/02	FY 02/03
$0	$2,232.4	($1,185.7)	($200.7)	$0

PROJECT COSTS

1.	Fiscal Year	Data for this section will be derived from the EAW	TOTAL
2.	One-Time Cost		
3.	Continuing Costs		
4.	TOTAL PROJECT BUDGET		

SOURCES OF FUNDING

5.	General Fund						$
6.	Redirection	Data for REDIRECTION will be derived from the EAW					$
7.	Reimbursements						$
8.	Federal Funds						$
9.	Special Funds	$1,027.7	$2,406.9	$1,383.4	$1303.9	$1,303.9	$
10.	Grant Funds						$
11.	Other Funds						$
12.	NET PROJECT BUDGET	$	$	$	$	$	$

PROJECT FINANCIAL BENEFITS

13.	Cost Savings/Avoidances	Data for this section will be derived from the EAW
14.	Revenue Increase	
15.	Net (Cost) or Benefit	

Note: The totals in Item 4 and Item 12 must have the same cost estimate.

INFORMATION TECHNOLOGY PROJECT SUMMARY PACKAGE
SECTION F: VENDOR PROJECT BUDGET

Project #	
Date Rec'd	
Doc. Type	

VENDOR FSR COST

Vendor Cost for FSR Development (if applicable)	$157,360
Vendor Name	Logicon

VENDOR PROJECT BUDGET

1.	Fiscal Year	FY 98/99	FY 99/00	FY 00/01	FY 01/02	FY 02/03	TOTAL
2.	Primary Vendor Budget	$300.0	$1,083.6	$175.0	$100.0	$100.0	$
3.	Independent Oversight Budget	$50.0	$200.0	$50.0	$0	$0.0	$
4.	DOIT Oversight Budget						$
5.	TOTAL VENDOR BUDGET	$	$	$	$	$	$

----------(Applies to SPR only)----------

PRIMARY VENDOR HISTORY SPECIFIC TO THIS PROJECT

6.	Primary Vendor/Organization	
7.	Contract Start Date	
8.	Contract End Date (projected)	
9.	Amount	$

PRIMARY VENDOR CONTACTS

	Vendor	First Name	Last Name	Area Code	Phone #	Ext.	Area Code	Fax #	E-mail

Project #	
Date Rec'd Doc. Type	

RISK ASSESSMENT

	Risk Assessment Model (RAM)	Score	Rating
1.	**Strategic Risk**	1.0	
2.	**Financial Risk**	1.0	
3.	**Project Management Risk**	N/A	
4.	**Technology Risk**	N/A	
5.	**Change Management & Operation Risk**	N/A	
6.	**OVERALL RISK SCORE**		

7.	**Date of current RAM**	8/5/98

		Yes	No
	Has a Risk Management Plan been developed for this project?	X	

General Comment(s)
The Risk Management Plan is included in Section 7.0 of the FSR.

Project #	
Date Rec'd	
Doc. Type	

PROJECT PROFILE INFORMATION

1.	Implementation Approach:
X	Purchase and Integrate
	In-house Development
X	Vendor Development

2.	Project Type:
X	Application Development
	Artificial Intelligence
	C.A. Dispatch
	C.A. Design
	C.A.S.E.
X	Client Server
X	Database
X	E-mail/Messaging
X	EC/EDI
	EDI
	EFT
	Expert System
	Imaging
	G.I.S.
	LAN
	Mainframe
	Office Automation
	Telecomm
	WAN
X	WEB Technology
	Other:

3.	Business Program/Practice:
	Asset Management
	Case Management
	Contract Management
	Document Tracking
	Financial
	Fingerprint
	General Accounting
	Human Resources
	Law Enforcement
	Law Enforcement/AFIS
	Licensing
	Procurement
	Reg and Titling
	Project Management
	Telecommunication
	Workflow
X	Workload Management
X	Other: Data Collection/Validation/Analysis/Distribution

4.	Outsourced Components
X	Application Development
	Contract Manager
X	Database Design
X	Facilities Manager
X	Hardware
X	Independent Oversight
X	Telecommunications
X	Project Manager

4.	Outsourced Components (continued)
X	Quality Assurance
X	Site Prep
X	Software Developer
	Systems Analyst
X	Systems Integrator
X	Other: Implementation/Training

5.	Operating System:
	UNIX, Windows NT,

6.	Hardware Platform:
	RS 6000/ Compaq Pentiums or equivalent

7.	Database Engine:
	Oracle or equivalent

8.	Messaging Engine
	Microsoft Exchange

9.	WEB Server
	Custom Software

10.	Development Tools

11.	Network Protocols

3 Business Case

3.1 Business Program Background

The Office of Statewide Health Planning and Development (OSHPD) is a department of the California Health and Welfare Agency. OSHPD is organized into six divisions, encompassing five program areas and an administrative function, which supports not only the Office's programs but also the Office of Health Information for Policy (OHIP). The program area served by this FSR is the Healthcare Information Division which collects, edits, and publishes comprehensive data on health facility finances and utilization including discharge data on all hospital inpatients. This FSR is focused on information technology improvements in support of the services surrounding patient discharge data.

In December 1997, as a result of Senate Bill 1109, the California Health Policy and Data Advisory Commission (CHPDAC) developed a report entitled “Improving Health Care Information for the Benefit of All Californians” (Appendix B). To provide a solid foundation for this report, the CHPDAC engaged a team of healthcare experts who organized a series of public hearings involving a broad cross section of private individuals and organizations that were concerned with the healthcare of Californians. This report, routinely referred to as the “CHPDAC Report”, was forwarded to the Director of OSHPD to assist OSHPD in "improving the health of the public through information".

One of the significant findings from this report was the recognition and re-affirmation of the role of the state as expressed by the following quote:

> "The State Government is an entity with institutional stability that can provide publicly available information that is reliable and verifiable with equal access to all, and that can provide objective analyses of outcomes of care, access to care, and patient satisfaction through collaborations among State agencies and in partnership with the private sector.”

This finding reaffirmed the value of the state and its unique position in providing the services of collecting, distributing, and analyzing data. To assist OSHPD in improving these services the report provided principal recommendations which were focused on the following 5 areas:

Timeliness, Accuracy, and Relevance: To improve the timeliness, relevance, and quality of data currently collected.

Continuum of Care: To extend data collection across the continuum of care received by patients.

Technology: To improve the speed and quality of information collection and distribution through improved technology.

Legislation: To remove barriers to flexible information collection through legislative changes.

Funding: To broaden the funding base for the collection and analysis of information.

These CHPDAC recommendations formed a basis for OSHPD strategic planning as well as enabling legislation in the form of Senate Bill 1973. OSHPD's most recent Strategic Plan[1] defines five goals for what OSHPD wants to accomplish or become over the next several years. These goals include "providing timely, accurate, objective, and comprehensive information, research and analysis". This is very much in step with the CHPDAC Report recommendations as well as the SB 1973 legislation.

Senate Bill 1973, which is currently under legislative review, utilizes the recommendations of the CHPDAC report to define a series of improvements to patient discharge data processing by OSHPD. This FSR defines a proposed solution to address these needed improvements. The improvements defined in SB 1973 include:

- Improve data timeliness with reduced reporting & processing times.
- Implement on-line transaction submission technology - to eliminate non-electronic data submissions, using national standards for electronic information exchange.
- Automate data edits/validation/cleansing - to reduce cycle time from data submission to distribution.
- Provide software support for small facilities reporting on paper.
- Support data input from Freestanding Ambulatory Surgery Centers & Emergency Room facilities.
- Improve data accessibility by the data user community.
- Support the future goal of data interchange - among health facilities, health care service plans, insurers, health providers, and other state agencies.
- Provide these improvements within the time constraints defined in SB 1973.

In addition to legislative mandates, the OSHPD requires a framework to support future OSHPD initiatives without traumatic impact to the proposed architecture. These future initiatives currently include:

- Create a data repository, which supports data mining and publishing tools.
- Standardize data elements and definitions with other health data collection programs at both the state and national levels.
- Enable linkage with, and utilization of, existing data sets.
- Improve the methodology and databases used for quality assessment analyses, including, but not limited to, risk-adjusted outcome reports.
- Provide an infrastructure that minimizes the impact of a change to a nationally standardized data set and source.

[1] State of California Office of Statewide Health Planning and Development Strategic Business Plan, May 1998 Draft

3.2 Business Problem or Opportunity

The elements of SB 1973 listed above are mandates for significantly faster data processing times as well as a significant expansion in data collection volume over the next three years. These elements also define an expanded role for OSHPD in serving the information needs of its customers. The authors of the legislation realized that the current data processing methods employed by OSHPD would be inadequate to achieve these aggressive mandates. As a result, the legislation identifies Information Technology goals and funds to assist OSHPD in achieving these goals.

Figure 3-1 - Current Business Process

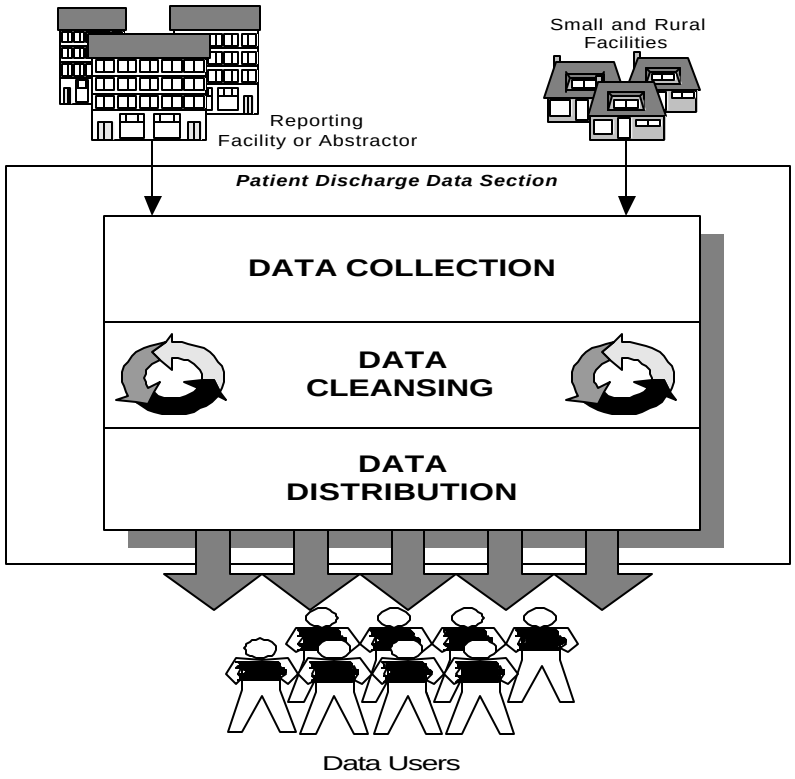


Figure 3-1 outlines the current business process for the Patient Discharge Data Section of OSHPD. This process consists of three core functions of data collection, cleansing, and distribution. OSHPD currently collects approximately 3.6 million records per year from nearly 600 licensed California hospitals. This volume will grow to nearly 12 million records as Ambulatory Surgery and Emergency Room data are added in response to SB 1973. Current data reports are received on a variety of electronic media (98%) and hardcopy forms (2%).

The current cleansing process is labor intensive and is supported by “legacy” mainframe software which is used to generate exception reports through batch processing. When this process is complete the data is 12 to 18 months old, when measured from the date of patient discharge. Much of SB 1973 is focused on reducing the cycle time for data

reporting and for OSHPD processing, to allow for more timely and effective data. If OSHPD data can be provided under the timeliness goals defined in SB 1973, these data can increase their usefulness to healthcare researchers and other data users. This usefulness serves to benefit the healthcare of all Californians, and allows OSHPD to provide maximum value to its customers.

The distribution process is also vital to providing timely data and information. Patient Discharge Data are currently distributed on a variety of electronic media and are not available on the web, as are other forms of OSHPD data. The authors of SB 1973 recognized distribution as a key component of data availability and structured aggressive data distribution mandates to assure timely availability of data following the cleansing process. OSHPD has an opportunity to implement a distribution system that supports both the aggressive distribution mandates of SB 1973 but also the future demands for data and information, that are key to OSHPD's strategic direction.

The CHPDAC report asserts that for the State to protect the health of the citizens there must be effective systems to collect and evaluate health care data. For a system to be effective it must make "access to accurate health care information fast, reliable, and useful." This FSR defines a conceptual system solution that focuses on "fast", "reliable" and "useful" healthcare data and information delivery. This solution not only achieves the mandates of SB 1973 for patient discharge data, but also supports the strategic direction of OSHPD itself. This FSR is clearly supportive of OSHPD mission to "plan for and support health care systems which meet the current and future health care needs of the people of California."[2]

3.3 Business Objectives

Table 3-1 identifies "Primary Business Objectives" and their corresponding Measurable Objectives. Also included is a definition of the "Operational Areas" affected by each objective. If the "Measurable Objectives" are achieved by the proposed solution, then the Primary Business Objectives will be satisfied. The Primary Business Objectives are focused on providing timeliness and quality from the Patient Discharge Data Section of the OSHPD.

[2] State of California Office of Statewide Health Planning and Development Strategic Business Plan, May 1998 Draft

Table 3-1: Business Objectives Matrix

Primary Business Objectives	Operational Areas Affected	Measurable Objective(s)
Improve Data Timeliness with Reduced Reporting & Processing Times	Entire HID Operation Data Providers Data Consumers	Provide system that supports… -- reduction in hospital submission time from 6 months to 3 months -- 15 day submission approval/reject turnaround time -- 15 days to data availability following approval reject cycle … all by 7/1/2000 Provide support for OSHPD optimization of Data Reporting Periods and Hospital Submission Times by 1/1/2001 Utilize a National Standard for Electronic Data Exchange
Utilize Electronic Data Exchange Technology	Data Collection Operation within HID Data Providers	Pilot EDI Exchange before 7/1/2000 Provide EDI Exchange for all providers by 1/1/2001
Automate Data Edits/Validation/Cleansing	Data Cleansing Operation within HID Data Providers	Replace Current Edit/Validation/Cleansing process w/ software process by 7/1/2000
Provide Software Support for Small Facilities Reporting on Paper	Data Collection Operation within HID Small/Rural Data Providers	Provide software solution to eliminate paper submissions & key entry by 7/1/2000
Support Data Input from Ambulatory Surgery & Emergency Room Facilities	Data Collection Operation within HID New Data Providers	Allow for new data sources (Ambulatory Surgery & ER) by 1/1/2002
Improve Data Accessibility by the User Community	Data Distribution Operation within HID All Data Consumers	Provide 15 day turnaround time from data acceptance finish to availability to data consumers by 7/1/2000 Provide a mechanism of electronic access to public data

Primary Business Objectives	Operational Areas Affected	Measurable Objective(s)
Support the Future Goal of Data Interchange	Entire HID operation All Data Consumers	Provide a Physical Architecture that supports a "Core Data Set" client identifier
Provide These Improvements Within the Time Constraints Defined in SB 1973	Entire HID operation All Data Providers All Data Consumers	Meet the time objectives listed for each objective above
Provide a framework for future OSHPD initiatives	Entire HID operation All Data Providers All Data Consumers	Create a set of "Object Models" that represents the business behavior and is subject to design review by the OSHPD prior to physical implementation

3.4 Business Functional Requirements

The Measurable Objectives listed in Table 3-1 identify the business functional requirements that are appropriate for the Feasibility Study Report. Additional Functional Requirements are defined in Appendix A - Use Cases. The Use Cases reflect the understanding of the new system from the user perspective. These Use Cases can be used to generate a set of "concrete" use cases, which are then utilized to generate an "Object Model".

The basis for the recommendations set forth in Section 5 - Proposed Solution is contained in the Concepts of Operation and Strategic Architecture documents, included as attachments to this FSR. The Concepts of Operation document summarizes the process of decomposing the current business situation or problem and exploring alternative solutions. It represents a conceptual design process that can then feed further cost and planning analysis in preparation for the Feasibility study report.

The Strategic Architecture document defines Logicon's recommended long-term architecture for the MIRCal system. The proposed architecture specifically addresses the operational environment (infrastructure) upon which the MIRCal application software will execute. The system architecture defines the structural properties of the system. Structural properties can be expressed in terms of components, interrelationships, and principles and guidelines about their use.

The Strategic Architecture document includes a logical description of all software and hardware components that provide system-wide services. The logical description presents the operational concepts and proposed architectural solutions to meet the functional requirements of the system. During the detailed design phase, the selected

implementation vendor will produce a physical design that will delineate the actual construction of the system.

The matrix in Table 3-2 below has been developed to demonstrate traceability from the stated requirements to the proposed solution. The measurable objectives and the use cases were utilized as input to this matrix.

Table 3-2: Requirements Traceability

Requirements	Solution Components
➢ Provide system that supports… -- reduction in hospital submission time from 6 months to 3 months -- 15 day submission approval/reject turnaround time -- 15 days to data availability following approval/reject cycle … all by 7/1/2000 ➢ Provide support for OSHPD optimization of Data Reporting Periods and Hospital Submission Times by 1/1/2001 ➢ Utilize a National Standard for Electronic Data Exchange	➢ EDI/EC, E-mail and WEB based data transmission interfaces ➢ Knowledge based editing System ➢ EDI translator ➢ Automated communication with the data providers via EDI/EC, E-mail, or WEB for error and success acknowledgements ➢ File level reject
➢ Pilot ED Exchange before 7/1/2000 ➢ Provide ED Exchange for all providers by 1/1/2001	➢ EDI/EC implementation in Phase 1 ➢ EDI Operational in Phase 2
➢ Replace Current Edit/Validation/Cleansing process w/ software process by 7/1/2000	➢ Knowledge based editing system ➢ EDI translator ➢ Automated communication with data submitters via EDI/EC ➢ Table driven editing ➢ Automated table updates
➢ Provide software solution to eliminate paper submissions & key entry by 7/1/2000	➢ WEB based data collection interface ➢ E-Mail attachments
➢ Allow for new data sources (Ambulatory Surgery & ER) by 1/1/2002	➢ Electronic Data collection framework in place ➢ TPA agreement negotiation ➢ Flexibility built-in to allow acceptance of new data types (e.g., nationally recognized standards) ➢ Scalable hardware
➢ Provide 15 day turnaround time from data acceptance to availability to data consumers by 7/1/2000	➢ RDBMS data storage methods ➢ WEB based access to data ➢ 'Client' interface to data

Requirements	Solution Components
➢ Provide a mechanism of electronic access to public data	➢ WEB based access to data
➢ Provide a Physical Architecture that includes a "Core Data Set" client identifier to support data interchange between external entities (e.g. hospitals, ambulatory surgery facilities, etc.)	➢ Data Model w/ RDBMS data storage methods
➢ Provide These Improvements Within the Time Constraints Defined in SB 1973	➢ Proposed Project Management Plan ➢ Proposed Risk Management Plan
➢ Provide a framework for future OSHPD initiatives	➢ Flexible design ➢ Scalable hardware
➢ Provide data traceability	➢ Current 'activity' system functions are a built in component of the proposed design ➢ Reporting status automatically updated ➢ Aging analysis is automated ➢ Data quality indicators are maintained and monitored ➢ Data quality, management and status reports are available ➢ Automated notices (e.g. reminders, delinquency, penalty) ➢ Online access to data reporting status through a client server interface

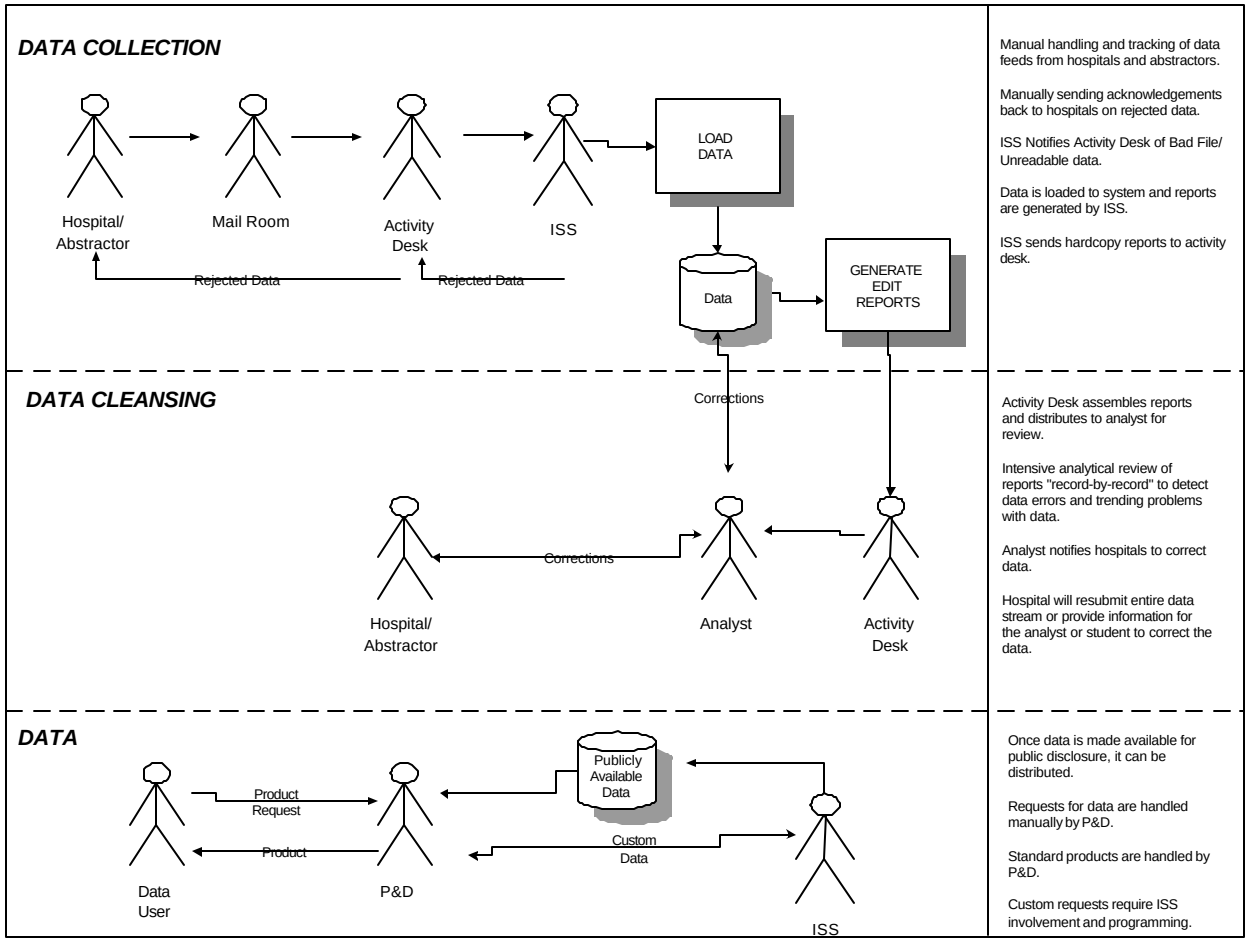
4 Baseline Analysis

4.1 Current System or Situation

The mission of the Patient Discharge Data Section is to collect the data, clean the data to ensure a high degree of quality and accuracy, and make the data available for distribution. The current system and procedures utilize a series of manually intensive processes in order to track the delivery of data, analyze the validity of data, and correct the content of the data. A substantial amount of staff resources, approximately 24 PYs, are currently required due to the manually intensive editing process, volume of data, and the high degree of data content discrepancies.

Figure 4-1 - Existing System Overview illustrates the current business process at the OSHPD for managing patient discharge data. The current system consists of three major components: Data Collection, Data Cleansing, and Data Distribution.

Figure 4-1 - Existing System Overview



4.2 Work Flow

The following is a discussion of each of the three major components and an overview of the workflow in each component.

Data Collection

- Data is currently submitted via tape, diskette, or paper and received by the OSHPD mailroom staff.
- The data is delivered to the Activity Desk where a review is performed to determine if the data is for the correct reporting period and from a certified abstractor or hospital. A series of data receipt logging takes place and a transport log is prepared.
- The medium is sent to ISS where it is forwarded to HWDC if on tape, uploaded if on diskette, or sent to key entry if on paper.

Data Cleansing

- Once the data has been loaded it is processed through a series of editing programs. Out of these programs, hardcopy reports of detected errors are generated. The reports are sent to the Activity Desk where they are assembled and distributed to the appropriate analyst.

- Intense complex edits for data cleansing, illogical ICD-9 coding, and licensing validations are performed. The following table, Table 4-1 - Edit Type, presents an estimate of the number and types of edits currently applied to the data.

Table 4-1 - Edit Type

Edit Type	Description	Estimated # of Edits
Standard Edits	Flag on invalid and illogical data	33
ICD-9-CM Edits	Flag on illogical relationships between ICD-9 codes	387
Code 2000 Edits	Flag inconsistencies between expected and reported types of care	1
Readmission Edits	Flag on illogical relationships between demographic data elements of all records for the same patient	31

- The analyst then reviews the reports to determine the cleanliness of the data reported by the hospital. This record level error review is a time consuming and in-depth analysis of the data submission.

- Depending on the cleanliness and severity of errors in the data, the analyst may require the hospital to resubmit all data or just make corrections to a portion of the data.

- If a resubmission is required, the analyst will generate a letter requesting the corrections and log the request with the Activity Desk personnel.

- Corrections received back in hardcopy form are then keyed into the system in order to update the database.

- The cleansing process is iterative until all corrections are made or errors are within acceptable tolerance levels.

Data Distribution

Once data is made available for public distribution, product customers may contact the Publication and Dissemination Section (P & D) to request and receive data. For custom data requests, P & D may request a special extract be generated by ISS.

Other Processes

In addition to the primary functions outlined above, the Patient Discharge Data Section (PDDS) generates reminder letters, delinquency letters and penalty letters. The current activity system automatically generates the reminder letters and allows for the tracking of allotted days for the purposes of delinquency and penalty tracking. Through the use of the existing Activity System and MS Excel worksheets, the disposition of a hospital's data is tracked.

4.3 Hardware/Software Environment

The department's technical architecture is a highly standardized environment, based on state policies and guidelines as well as widely recognized industry standards. Figure 4.2 – Current IT Infrastructure, illustrates the department's information technology structure as it currently exists. A wide area network (WAN) supports the Department's three locations, two in Sacramento and a field office in Los Angeles. The internal networked architecture supports internal communications including e-mail, office computing, a departmental Intranet and internal business based applications. Mainframe computing services, including those applications that support the current processing of Patient Discharge Data, are provided through the Health and Welfare Data Center (HWDC).

Figure 4-2 - Current IT Infrastructure

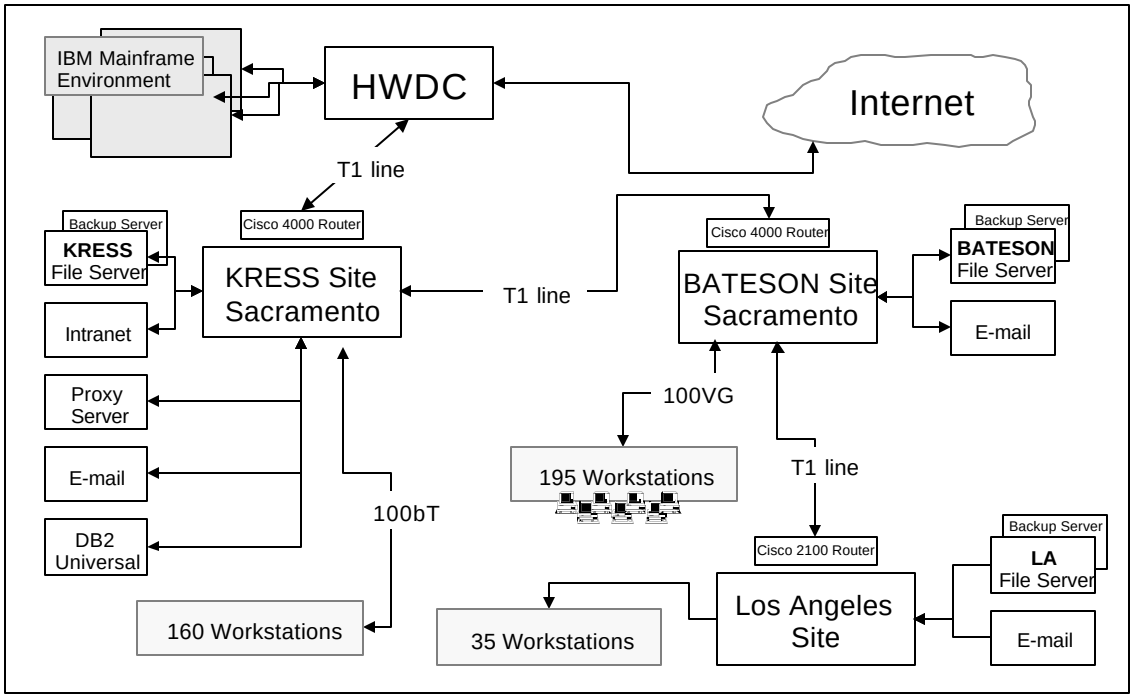


Table 4-2-1 lists the standards currently in place for the infrastructure depicted above.

Table 4-2-1 - IT Infrastructure Standards

Desktops - minimum configuration: • Intel Pentium class PC • 32 MB RAM	**Personal Productivity Software:** • Migration towards Microsoft Office 97 and Office Pro 97 • WordPerfect 5.1 for Dos • GroupWise 4.1
LAN Servers: • Novell 4.11 NOS SMP • Pentium Class Dual Processor • 128-500MB RAM • Fault Tolerant (Vinca Standby Server) • Novell ManageWise	**Operating System Software:** • Microsoft Windows 95 • Novell 32 Client
Network Protocols: • IPX • TCP/IP • SNA to Mainframe	**Database Management Software:** • DB2Universal for NT
Application Development Methodology • Various methodologies • ErWin*EX* for Data Modeling	**Application Development Software:** • Microsoft Visual Basic 5.0 • Microsoft Access • HTML
Mainframe Environment: • COBOL • VSAM • SAS • NATURAL	**Other:** • PC SAS

4.4 Support Environment

The collection, cleansing, and distribution of the data requires a significant number of staff due to the manually intensive processes. Table 4-3 - Approximate Staffing Support Levels is a listing of the current staff allocations associated with the processing of PDD.

Table 4-3 - Approximate Staffing Support Levels

	Number of Staff
Patient Discharge Data	
Manager	1
Supervisor	1
Lead	1
Analyst	12
Clinical Coding	1
Medical Records Cons.	2
Activity Desk	2
Clerical	2
Student Assistant (Part Time)	4
Information Systems Section	
Approx. Staff Allocation	3.5
Publication and Dissemination Section	
Approx. Staff Allocation	1.5

Integrated systems support for the business need for collecting, cleansing and disseminating data is currently insufficient. The following is a breakdown of the three sections responsible for the patient discharge data and a synopsis of the support level or problems encountered.

Patient Discharge Data Section

In order to collect and make the patient discharge data available, a significant amount of resources are allocated to the manually intensive processes currently in place. The current allocation of 12 analysts is required due to the complexity of the analytical review and editing processes. While the staff is highly dedicated and motivated, the process is so complex that the average learning curve for an analyst is approximately one year.

The existing activity system is a stand-alone application and does not include a comprehensive tracking and reporting mechanism. For example, the activity system only keeps record of the status of the last data submission for a hospital. Therefore, a

manual log is kept in Excel to track the date and problem with the previous data transmissions.

Information Systems Section

The average number of ISS staff allocated to the PDD process on a monthly basis is approximately 3.75 PYs. A majority of this time is spent in the routine problem evaluation and the on-going maintenance of the current system.

Currently, ISS does not have the additional staff resources necessary to support a significant process improvement. A number of on-going projects (e.g. Year 2000) and existing operations have current resources saturated.

Publication and Dissemination Section

The Publication and Dissemination Section (P&D) supports the requests for standard and custom data requests. Data is distributed to a wide array of users including, but not limited to state and local public health departments, the hospital industry, outpatient service providers, health planners, Medi-Cal, Medicare, health advocacy groups, health care purchasing groups, academia and mental health organizations. Patient discharge data is currently distributed on various types of media including CD-ROM, diskette, and hardcopy.

4.5 Additional Characteristics of Current System

***Workload Capability* --** The ability of the system to meet current and projected program and workload requirements:

Current Requirements	Met?		Proposed Under SB1973	Met?
Semi-annual reporting	Yes		OSHPD defined reporting periods	No
Accepts tapes, diskettes, paper	Yes		Accepts standard on-line transmissions	No
OSHPD defined data set	Yes		Changing data set/national data set	No
OSHPD editing of data	Yes		Editing software to small/rural hospitals	No
Six month data availability	Yes		15 day data availability	No
Hospitals - 60 extension days	Yes		15 day period for accept/reject data	No
			Data interchange plan	No
			Collection ER/Ambulatory Surgery data	No

***User & Staff Satisfaction* --** The satisfaction of internal staff and external data users, with regards to timeliness and quality.

Patient Discharge Data Staff		
Component	**Satisfaction with Timeliness**	**Satisfaction with Quality**
Collection	Low – having to physically handle multiple types of media from approximately 600 hospitals	Low – initial processing of the data involves numerous manual steps
Editing	Low – hospital data does not come in clean, repeated interactions with hospitals are required to cleanse the data	High – the edits are comprehensive and result in consistent data
Dissemination	OK – data is made available to the public within mandated timeframes	OK – data disseminated on a variety of media in both public & non-public formats
External Users of Discharge Data		
Component	**Satisfactions with Timeliness**	**Satisfaction with Quality**
Collection	Low – shorter collection timeframes would result in shorter dissemination timeframes	N/A
Editing	Low – need to shorten editing time	High – the quality of the cleansed data is very good
Dissemination	Low – data is too old to be useful for many purposes	Low – need increased accessibility

Data Input

The following table contains information obtained from the Patient Discharge Data Section's Master Activity Listing for discharge data reports. The data was submitted for the January 1 through June 30, 1997 reporting period, and projected for the entire year to develop these estimates.

Activity Projected for the Year of 1997						
	One Hospital One Type of Media		**One Hospital Two Types of Media**		**Total**	
Media	**Submissions**	**Records Submitted**	**Submissions**	**Records Submitted**	**Submissions**	**Records Submitted**
Magnetic Tape	784	3,128,476	10	34,634	794	3,163,110
Diskettes	166	377,082	2	2,444	168	379,526
Paper	158	59,390	12	1,920	170	61,310
Total	*1,108*	*3,564,948*	*24*	*38,998*	*1,132*	*3,603,946*

File Characteristics --

Attribute	**Information**
Record Size	Variable… 104 - 326 bytes/Record
Records per File	Variable, total of 3.6 million records/year over all files
File Size	Variable

Record Elements -- The discharge data set currently includes the following data elements.

No.	**Data Element**	**Size**	**Type**	**Comment**
1	Type of Care	1	Numeric	
1a	Hospital Identification Number	6	Numeric	
2	Date of Birth	8	Numeric	
3	Sex	1	Numeric	
4	Race	2	Numeric	
5	Zip Code (residence)	5	Alphanumeric	
6	Admission Date	6	Numeric	
7	Source of Admission	3	Numeric	
8	Type of Admission	1	Numeric	
9	Discharge Date	6	Numeric	

No.	Data Element	Size	Type	Comment
10	Principle Diagnosis	5	Alphanumeric	
10a	Condition Present on Admission	1	Alpha	
11	Other Diagnosis	5	Alphanumeric	Up to 24
11a	Other Condition Present on Admission	1	Alpha	One for each Other Diagnosis
12	Principle Procedure	4	Alphanumeric	
12	Principle Procedure Date	6	Numeric	
13	Other Procedures	4	Alphanumeric	Up to 24
13	Other Procedure Date	6	Numeric	One for each Other Procedure
14	Disposition of Patient	2	Numeric	
15	Expected Source of Payment	2	Numeric	
16	Total Charges	7	Numeric	
17	Abstract Record Number	12	Alphanumeric	Optional
18	Principle E-code	5	Alphanumeric	
19	Other E-codes	5	Alphanumeric	Up to 4
20	Social Security Number	9	Numeric	

Security, Privacy and Confidentiality

Patient discharge data submitted by hospitals to the Patient Discharge Data Section is the property of OSHPD, and its confidentiality is maintained. Employees hold medical/patient information in strict confidence. Unauthorized disclosure of information is prohibited. Access to patient discharge data is limited to designated individuals who are aware of the need to maintain confidentiality and of the penalty for inappropriate use and/or release of information.

Access to the Patient Discharge Data Section is restricted to authorized personnel via the electronic cardkey reader pad at the door entrance. During the editing process, all paper abstracts are stored in locked drawers, CDs and tapes are stored in a designated locked room within this Section, all other reports are kept in hospital files, and computer screens are shut down every evening. Photographing of data is prohibited. Hospital files and any other computerized data are never taken out of Patient Discharge Data Section for work at home or sharing with other sections of this building.

In the absence of regulations that allow or prohibit use of facsimile machines for transmitting patient discharge data (or any healthcare data), OSHPD has taken precautionary steps. All facsimile material are introduced by a cover sheet which contains a confidentiality statement with instructions to notify the Patient Discharge Data Section if anyone receives a copy in error. Reports with Social Security numbers are handled by telephone before and after faxing.

Upon completion of the editing process, all reports with Social Security numbers are destroyed by use of the shredding machine. Until such time, these reports are kept in locked cabinets. Sensitive reports containing individual patient information without Social Security numbers are discarded in the large Post Office canvas bin marked, "Confidential" which will later be shredded by a recycling organization under the direct observation of an employee of the Patient Discharge Data Section.

Other data reports without patient level data are discarded in the ecology bins for recycling. Certain data reports are kept for retrieval. The retention policy for maintaining patient discharge data on hard copy is governed by retention laws, availability of storage space, and usage of data. The files are kept on-site for three years and then are purged and kept at the State's Record Center for four years, and then destroyed.

Special security precautions are set up by defining access limitations, controlling access by password, defining input and output limitations (read and/write), and maintenance of backup files. This is updated when there are changes in security levels and for termination of passwords when employees leave the Patient Discharge Data Section.

To protect loss, alteration, or improper release, the backup files are located off-site at Health and Welfare Data Center and on-site at the Information Systems Section of OSHPD. The data are protected by resource control access facility (RACF). The RACF system will alert the RACF manager for any breaches of access. The computerized data is kept indefinitely.

OSHPD has adopted and maintained a written policy governing disclosures of discharge data to the public, which restricts access to data elements, singly or in combination with other data elements, that might compromise patient confidentiality. There are definitions for three versions: Public, Non-Public, and Confidential. No patient level data are allowed in the internet or given out on other types of media without full review and approval by designated reviewers in the Patient Discharge Data Section, the Committee for Protection of Human Subjects, OSHPD Legal Office, and the Healthcare Information Division Deputy Director.

Each request for data involves analysis, questions, dialogues, search for alternative ways to protect patient confidentiality, and follow-up for return of the non-public or confidential data. The approved confidential data are shipped by overnight mail, along with obtaining the signature of the responsible party receiving the data. The corresponding documentation of the information contained in the dataset is mailed separately. All actions involving each request are logged on the shared spreadsheet between the Publication and Dissemination Section and the Patient Discharge Data Section.

System Documentation

The laws and regulations of the State of California, by mandate, govern the Office of Statewide Health Planning and Development (OSHPD), the Healthcare Information

Division, and the Patient Discharge Data Section (PDDS). The processes for changes to the laws and regulations as pertains to PDDS are discussed below:

LAW: California Health and Safety Code, Division 107 Statewide Health Planning and Development, Part 5 Health Data, Chapter 1 Health Facility: Changes to the law are made by legislative enactment with gubernatorial approval. Regulations are required to implement the law, and the state agency, Health and Welfare, is granted rulemaking authority.

Subdivision (g) of Section 128735. Health facilities; reports; exemptions from disclosure requirements; liability; hospital discharge abstract data record; patient confidentiality. This Subdivision of the Health and Safety Code contains the Hospital Discharge Abstract Data Record, which contains the patient discharge data elements hospitals are required to report to the Patient Discharge Data Program.

REGULATIONS: Regulation changes are not arbitrary and are changed only by legislative mandate or when otherwise necessary. California Code of Regulations, Title 22, Division 7, Chapter 20 Health Facility Data, Article 8 Discharge Data Reporting Requirements. Sections 97210 through 97243 explain the requirements by which health facilities report the patient discharge data elements.

The regulations may be changed in three ways: by emergency regulation changes, substantive regulation changes, and non-substantive regulation changes. Addressed here are non-substantive and substantive changes:

Non-substantive Changes: Commonly known as Section 100 of the Rulemaking process. Non-substantive changes do not change the actual substance of the regulation. Non-substantive changes may include revising structure, syntax, cross-reference, grammar, or punctuation. Non-substantive changes were made to the PDDS regulations in August 1997.

Substantive Changes: Throughout the years substantive changes were made to the PDDS regulations because of legislative mandate adding data elements to the Hospital Discharge Abstract Data Record. The most recent change was the addition of data elements to indicate whether principal and/or secondary diagnoses were present at admission. These changes include the categories of data elements, as well as changes to the file format and exact specifications for reporting the data element.

More recently, a Notice of Proposed Changes was submitted to the Office of Administrative Law for publication and published on May 29,1998. The proposed substantive and non-substantive changes were mailed to all hospitals reporting discharge data to OSHPD and to interested parties. The comment period for the

proposed changes ended on July 13, 1998, at 5:00 p.m. The effective date for the proposed changes is with discharges on and after January 1, 1999.

The proposed changes include:

- adding two digits to all date data elements for Y2K compliance,
- requiring reporting of the data element pre-hospital care and resuscitation,
- change the categories of the data element expected source of payment to include managed care plan names,
- require reporting of ZZZZZ for the ZIP Code of homeless patients,
- delete acceptance of the coding classification DSM IV for coding psychiatric diagnoses,
- change acceptance criteria,
- change the Manual Abstract Reporting Form and the data format and specifications to reflect the above changes

Generally, substantive changes take up to one year to complete the process, including Secretary of State approval.

Regulatory Documentation - The following is a table of regulatory and non-regulatory documents issued by PDDS during the input, correction, and dissemination processes:

REGULATORY DOCUMENTATION			
DOCUMENT	**DESCRIPTION**	**CHANGES**	**AUDIENCE**
Title 22, Sections 97210 –96243	Reporting requirements	Legislative mandate. Necessity	Health facilities Software vendors Researchers
Manual Abstract Reporting Form (OSHPD 1370)	See Title 22	See Title 22	See Title 22
Format and Specifications for Magnetic Tapes	See Title 22	See Title 22	See Title 22
Format and Specifications for 3¼" and 5½" diskettes	See Title 22	See Title 22	See Title 22
Format and Specifications for 8" diskettes	See Title 22	See Title 22	See Title 22

NON-REGULATORY DOCUMENTATION			
DOCUMENT	**DESCRIPTION**	**UPDATED**	**AUDIENCE**
California Patient Discharge Data Reporting Manual	Non-regulatory discussion of specific reporting requirements	Regulatory changes Editing criteria changes	Health facilities Software vendors Researchers Other Data Users
Discharge Data File Documentation (Public Version)	Magnetic tape and CD-ROM output format described in fixed record length/comma delimited record	Semiannually with availability of data	Health facilities Software vendors. Researchers Other Data Users
Discharge Data File Documentation (Non-Public Version)	Magnetic tape and CD-ROM output format described in fixed record length and comma delimited record	Semiannually with availability of data	Health facilities Software vendors Researchers Other Data Users
Discharge Data File Documentation (Confidential Version)	Magnetic tape and CD-ROM output format described in fixed record length	Semiannually with availability of data	OSHPD Divisions Other state agencies Researchers Other Data Users
Discharge Data Review	PDDS' Newsletter	Quarterly/As needed No longer in existence	Health facilities Software vendors. Researchers
CHIA Journal (California Health Information Association)	Articles by Medical Record Consultants	As needed	Health information professionals
Editing Criteria Handbook	Edits and flags used to identify errors and lack of adherence to reporting requirements.	As needed	Health facilities

5 Proposed Solution

5.1 Background, Objectives, and Scope

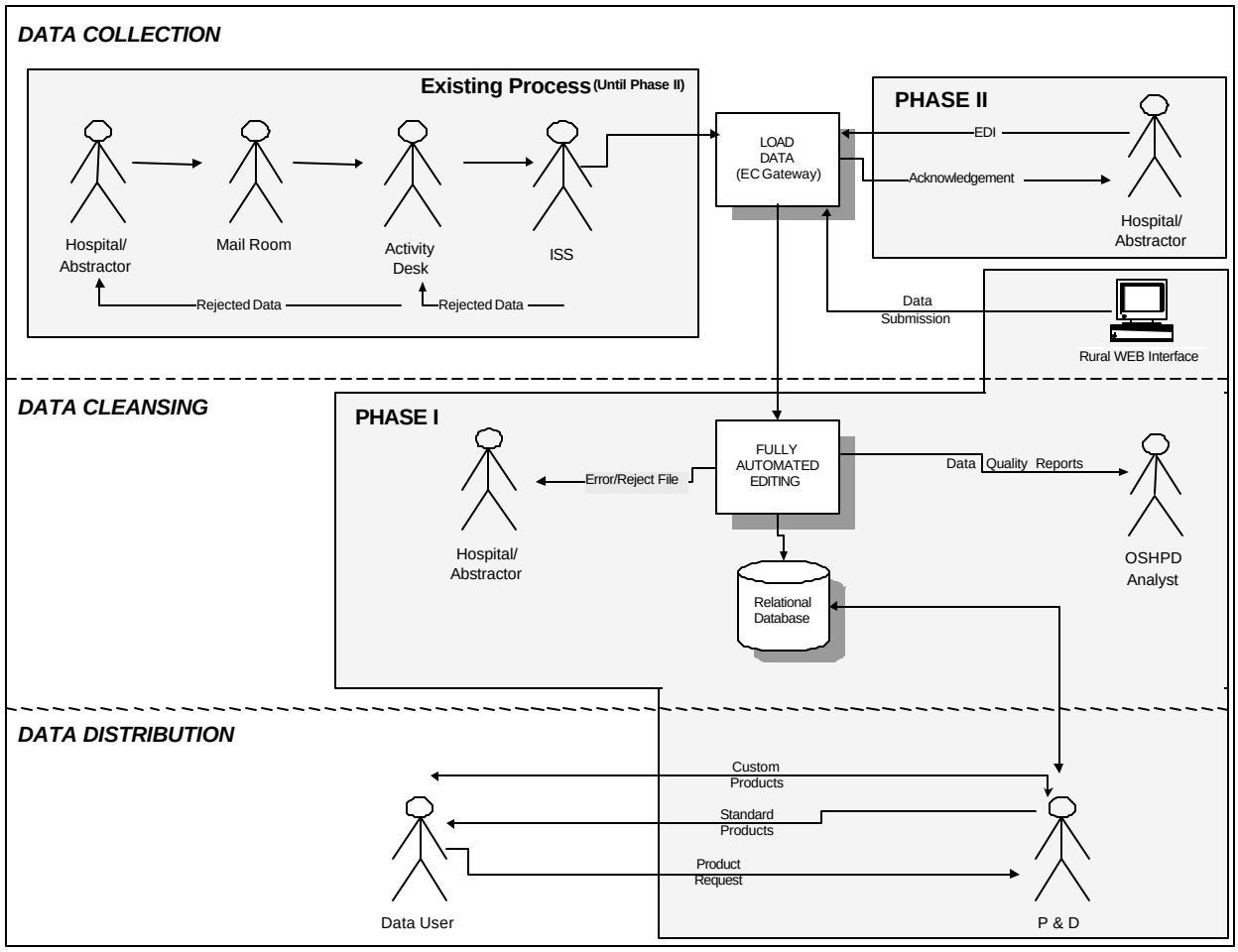
This section presents the recommended long-term proposed solution for the OSHPD Medical Information Reporting for California (MIRCal) system. To meet the legislative and strategic business requirements, the design of MIRCal moves OSHPD away from the manually intensive data tracking and correction environment to an analytic environment. The automated collection and cleansing of data are implemented in three phases to mitigate the risks associated with change of this magnitude.

5.2 Solution Description

The implementation strategy for MIRCal will support the long-term needs of patient discharge data reporting at the out-set. Implementing a system which addresses the long-term requirements provides lower development costs, fewer operating impacts on both the OSHPD staff and the data providers, and provides the ability to easily pilot Phase 2 and Phase 3 activities.

MIRCal is proposed to be implemented in three phases to provide a smooth transition between major stages following the implementation of the basic functionality and core components in Phase 1 Figure 5-1 outlines the three phases in relation to the major components.

FIGURE 5.1 – PROPOSED SYSTEM OVERVIEW



5.2.1 Phased Implementation

The following is a phase by phase description of the component implementation of the MIRCal system.

Phase 1

Collect Data

- Implement an electronic commerce (EC) gateway that will incorporate the use of electronic data interchange (EDI) to enable electronic submission of data by hospitals. In order to support the move to a fully automated EDI process in Phase 2, manual loading of the data on electronic media into the EC gateway will be necessary for Phase 1.
- The EC gateway supports Web access by small and rural hospitals. To provide for a transitional period, MIRCal will support the continued submission of electronic media (e.g., tape, floppy disk, CD).
- The development of a WEB based application to enable the small and rural hospitals the ability to

electronically enter and submit data will assist in the elimination of paper submissions.

- Implement a relational database as the repository for the data.
- Appropriate levels of security will be developed to ensure secured data transmissions from the WEB based application and electronic data submissions.
- Begin to develop Trading Partner Agreements (TPA) with hospitals in preparation for the move to Phase 2 full EDI submissions. Establish a pilot EDI program with one or more selected data providers.
- Implement automated validation rules to screen incoming data. Automation of the standard edits, coding edits, Code2000 edits, and trending edits will detect errors in data transmissions without manual intervention. If errors are detected, they will be reported to the hospital/abstractor with minimal human intervention. To provide for a transitional period, the data errors detected will be sent via e-mail, fax or through paper reports to the hospital/abstracter.
- Data Quality reports will be generated for OSHPD to review and monitor hospital performance and data quality.
- Management reports will be generated to provide for OSHPD management to monitor system performance.

Distribute Data

- Make standard data extracts (non-confidential) available for WEB distribution.
- Provide OLAP and Data Mining tools available for OSHPD internal use.

FSR Preparation

- Develop and obtain Agency approval of the FSR(s) for Phase 2 and Phase 3.

Phase 2

Collect Data

- Finalize the TPAs and implement the use of electronic data interchange (EDI) to enable on-line submission of data by hospitals.
- Utilize the EDI process to send file acknowledgements and error notification and to receive corrected data files from the hospitals/abstractors.
- Initiate the signing of TPAs for the submission of ambulatory surgery and emergency care data via EDI during Phase 3.

Phase 3

Collect Data

- Develop and publish standard data set and associated edit validation criteria for records to be submitted by Emergency Room and Freestanding Ambulatory Surgery Center facilities for health care delivered on or after January 1, 2002.
- Finalize the TPAs and implement the use of electronic data interchange (EDI) to enable on-line submission of data by Emergency Room and Freestanding Ambulatory Surgery Center facilities.

- Initiate the use of electronic data interchange (EDI) to enable on-line submission, acknowledgement and error correction of patient data from Emergency Room and Freestanding Ambulatory Surgery Center facilities.

Phase N

The following are add on project opportunities that are not planned or scoped within this proposed solution but should be evaluated by the OSHPD Management:

- Integration of other OSHPD data sources, such as hospital financial and utilization data.
- Implementation of a commercial off-the-shelf (COTS) point-of-sale and inventory system for tracking product sales.
- Integration of a cost accounting system for tracking data provision fees and penalties.
- Integration of other health data or service data with the OSHPD patient discharge data.
- Integration of a WEB Based Data Mining application to support the interactive inquiry and download of custom data sets.

The conceptual design and information technology framework developed for the Phase 1 requirements must accommodate the goals and requirements of all three phases of the MIRCal project.

5.2.2 Hardware

MIRCal hardware consists of a database server and mail server residing at a State data center. Both servers will be UNIX-based and will conform to data center standards. Client workstations will be consistent with OSHPD's current standards. Web access will be implemented on OSHPD's existing Web server.

5.2.3 Software

The fundamental design objectives of MIRCal are: the minimization of human intervention in data collection, clean-up, and distribution; support changes in business needs without traumatic changes to the design; and establishing a design that can be used by OSHPD as a basis for future development. To achieve these objectives, MIRCal is designed using a loosely coupled, layered software design, built using a component architecture. Employing a layered approach provides OSHPD the ability to add, delete or change business procedures with minimal impact to other functions. The component approach provides for re-use of business objects both within MIRCal and for other OSHPD initiatives. Once again, isolating changes within the objects enhances maintenance.

5.2.4 Technical Platform

MIRCal will be implemented as a client-server based system operating against a relational database management system (DBMS). Access for low-volume data providers will be through a Web server.

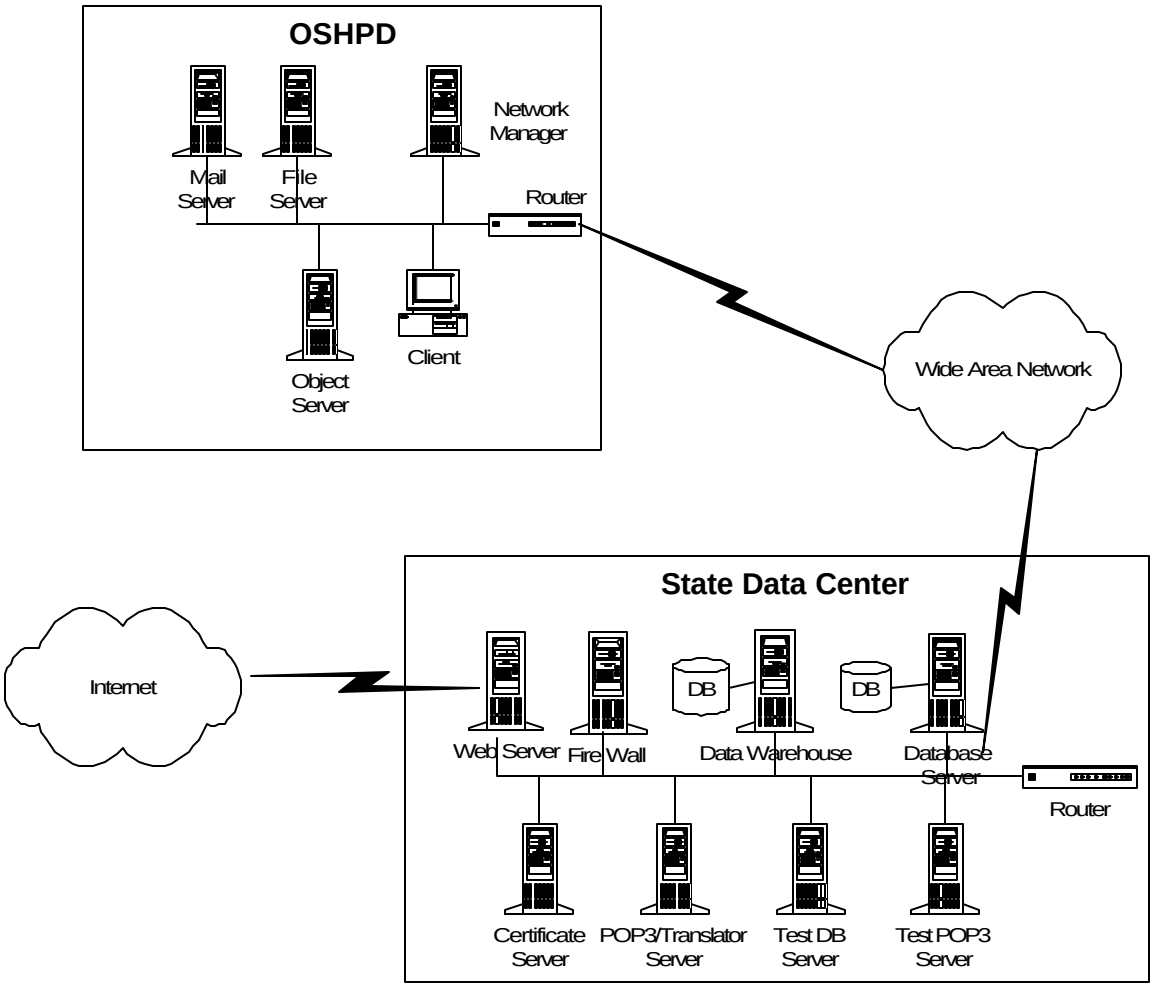
MIRCal is basically a stand-alone system, with no interfaces to legacy OSHPD systems. Interfaces consist of importing additional data, such as census data, to be used as statistical denominator data.

With SB1973, data volume will increase from 3.6 million transactions per annum to over 12 million transactions per annum following full implementation of Phase 3. MIRCal will be able to absorb this increase through its layered approach to hardware and software design.

Figure 5-2 - Hardware/Software Components is a graphical depiction of the technical platform.

The Strategic Architecture component of this document contains a detailed listing of the hardware and software supported by this architecture.

Figure 5-2 - Hardware/Software Components



5.2.5 Development Approach

The MIRCal System development efforts will be performed by a Design, Development and Implementation (DD&I) vendor that has demonstrated, during the procurement process, an acceptable systems development methodology and approach. While the DD&I vendor will be responsible for the development of the system, the OSHPD Project Team will be responsible for reviewing and approving key deliverables during the development efforts.

The DD&I vendor may use a development approach that is specific to their organization. During the procurement process, it will be the responsibility of the vendors to propose the development approach Key project deliverables will be defined as a component of a Request for Information (RFI) defined for procurement of DD&I services. While reviewing the vendor bids, the OSHPD Project Team will ensure that the development approach allows for the delivery and State approval of these key deliverables at each phase of the project.

5.2.6 Integration Issues

The overriding risk to the successful implementation of MIRCal is the use of electronic transmission of data as specified in SB1973 for Phase 2. Electronic Data Interchange (EDI), while a common technology in the private sector, has not been extensively implemented by the State. The risk in implementing EDI will be ameliorated by using a DD&I vendor with EDI expertise, preferably in a similar environment.

5.2.7 Procurement Approach

OSHPD recognizes that long lead-time in developing systems results in significant increases in risk. As such, OSHPD desires to minimize procurement costs and time. OSHPD will obtain the services of the DD&I vendor using MSA/CMAS agreements. OSHPD will develop an RFI that will provide bidders both business and technical requirements by incorporating the Strategic Architecture and Use Case documents. Responses will be evaluated using structured evaluation criteria. The evaluation criteria will be assembled, with the assistance of an Independent Verification and Validation (IV&V) vendor, contemporaneously with the RFI.

5.2.8 Technical Interfaces

MIRCal does not have a functional interface with any other system. OSHPD currently uses the 3M APR-DRG system to add value to the data. The interface consists of downloading a subset of data to a stand-alone system, executing the DRG software, and then uploading and posting the data to MIRCal. During development, the DD&I vendor will evaluate if there is a more effective mechanism.

5.2.9 Testing Plan

Critical to the success of the MIRCal development project is the reliability of the application. Therefore, thorough testing of the MIRCal application is required prior to the rollout and release of the system.

A majority of the testing (unit, module, and system) will be the responsibility of the DD&I vendor while the OSHPD Project Team will be responsible for User Acceptance Testing. The DD&I vendor must be committed to the testing process and will be required to submit a Quality Assurance Plan and Master Test Plan for State review. Additional detailed Test Plans will also be required from the DD&I vendor for State review and approval prior to the formal testing.

In addition to State review and approval, the IV&V vendor will perform test audit reviews to ensure that sound testing is being practiced and assist in the review of the Test Plan deliverables. Through the test audit reviews and deliverable reviews, the IV&V vendor will aid in determining the maturity of the system.

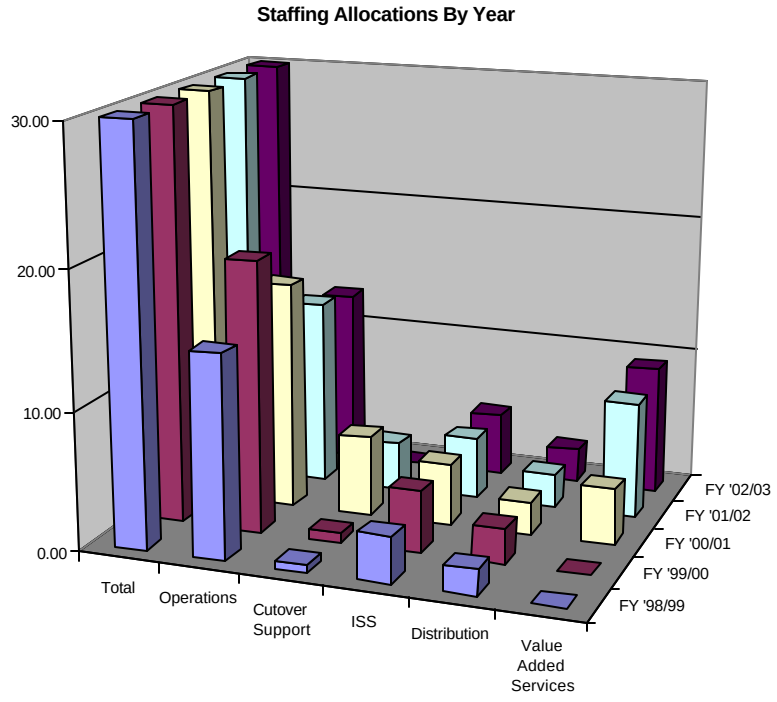
5.2.10 Resource Requirements

With the start-up and implementation of MIRCal, resource-staffing needs must be balanced with on-going operational requirements of the existing system. Three distinctive activities will be taking place, sometimes concurrently, as OSHPD migrates from one operational environment to another. The three activities can be defined as follows:

- Current Operations – What it takes to operate and manage the current system.
- Development – Level of staffing necessary from OSHPD to participate in MIRCal DD&I activities.
- MIRCal Start-Up and Operations - Level of staffing required to start-up and operate MIRCal.

To summarize the staffing allocation estimates, Figure 5-3, Resources by Fiscal Year, illustrates a fiscal year by fiscal year comparison of the estimated number of resource allocations by area. The figure illustrates that the migration from the current system to MIRCal will decrease the staff required for Operations and subsequently increases the staff available for Value Added[3] services. The resources for Distribution remain fairly stable while the ISS staff increases by one PY to a total of 4.75 PYs.

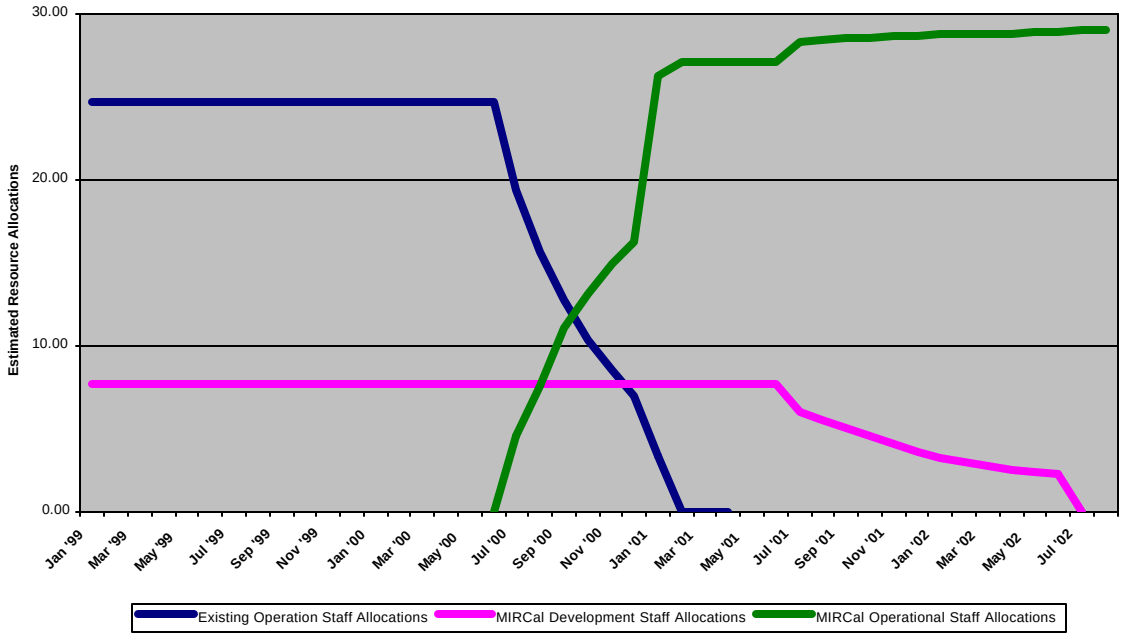
Figure 5-3 - Resources by Fiscal Year



[3] The term 'value added services' is being used to describe those functions that will be performed by OSHPD staff to support the mission and strategic direction detailed in Sections 3 & 4.

OSHPD will be required to continue to operate and perform the same level of duties and responsibilities as currently defined until the implementation of MIRCal. It is anticipated that the current system will remain operational through June 2001 in order to complete the editing and cleansing of the July 1, 1999, through December 31, 1999, reporting period data. As the final reporting period is completed, staff will migrate from the existing system operational environment into the MIRCal operating environment. This migration of staff is anticipated to begin July 1, 2000. Figure 5-4 – Resource Movement Over Time illustrates the resource movement from the current system to MIRCal over time.

Figure 5-4: Resource Movement Over Time



Development/Cut-Over Support

The OSHPD MIRCal project team will be responsible for supporting the cutover efforts of MIRCal. This would entail responsibilities such as assisting in the requirement definition, participating in project meetings, and reviewing MIRCal documentation. Table 6-1 – OSHPD Project Team outlines the OSHPD project team members and their proposed responsibilities.

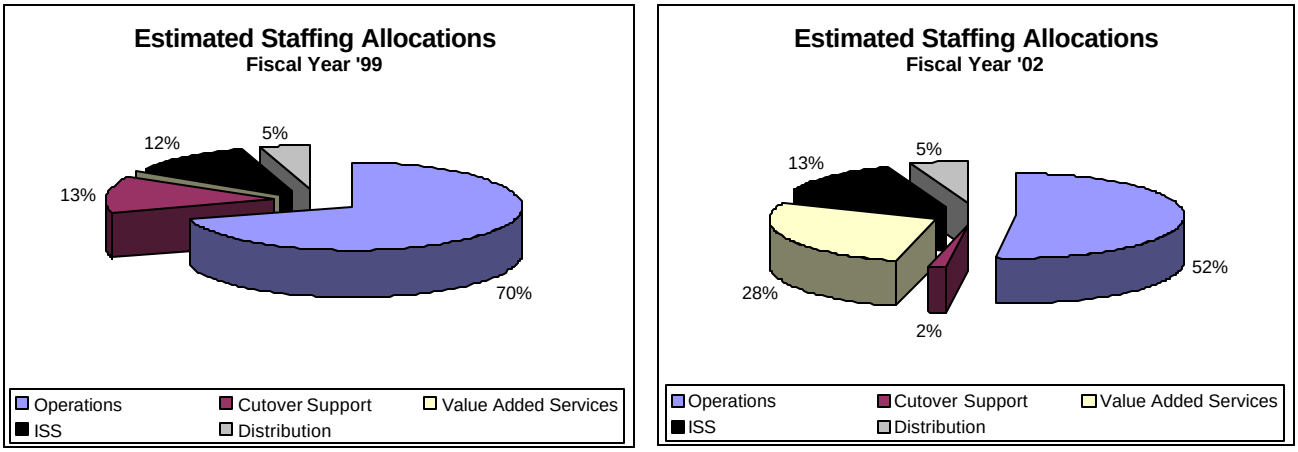
MIRCal Start-Up and Operations

To support the processing of data for January 1, 2000 to June 30, 2000 reporting period, it is planned that the MIRCal Phase 1 application components (edit and validation) will be production ready on July 1, 2000.

As OSHPD migrates from the current system to MIRCal, staffing resources will be migrated from today's data cleansing intensive environment into future value added

services. The following pie charts illustrate the migration OSHPD will be making between Fiscal Year '99/00 and Fiscal Year '01/02.

Figure 5-5: Staff Migration Charts



Implementation Tasks

Table 5-1 - MIRCal Rollout Activities illustrates the tasks, responsible organization, estimated start dates for the tasks and an estimate of the PYs required to complete the tasks for each MIRCal project Phase.

Table 5-1 - MIRCal Rollout Activities

Phase	Task	OSHPD	DD&I	IV&V	Data Center	Date	OSHPD Program PYs	Data Center PYs
1	Develop Documentation For Small/Rural Input Option.	X	X	X		4/1/99 – 6/30/99	.25	
1	Distribute Small and Rural Documentation and Train Small/Rural Staff	X		X		10/1/99 – 12/31/00	2	
1	Support Small/Rural Implementation.	X	X	X		7/1/00 – 6/30/01	1.5	
1	Advise hospitals of electronic submission requirements. Distribute specifications.	X	X	X	X	4/1/99 – 6/30/99	.5	.1
1	Support electronic file submission file/data testing.	X	X	X	X	1/1/00 - 5/1/01	1	.5
1	Notify hospitals of reporting timelines for FY '99.	X	X	X	X	4/1/99 – 5/31/00	.25	.1
1	Develop Training Program for Staff & Hospitals	X	X	X	X	1/1/00- 5/31/00	.5	.1
1	Train OSHPD staff on new edit/process procedures. (PYs include staff time @ 2 weeks)	X	X	X		6/1/00 – 7/1/00	1.25	
1	Document/Distribute information on new error reporting (paper/fax prior to EDI) Procedures.	X	X	X		11/1/99 – 9/30/00	.25	
1	Support hospital error analysis/correction for new edit process/reports.	X		X		7/1/00 – 4/30/01	3	

Phase	Task	OSHPD	DD&I	IV&V	Data Center	Date	OSHPD Program PYs	Data Center PYs
2	Notify hospital of revised reporting period and turnaround requirements.	X		X		4/1/99 – 3/31/01	.5	
2	Develop Trading Partner Agreement (TPA) for hospitals.	X	X	X	X	1/1/99 – 6/30/00	1	.5
2	Notify hospital of EDI mandate and distribute TPA.	X				1/1/00 – 4/30/00	.25	
2	Enroll/Certify hospitals.	X			X	4/1/00 – 4/1/01	2	
2	Provide technical support for EDI submission/error correction.	X	X	X	X	1/1/01 – 12/31/02	6	
2	Provide training for hospital staff.	X	X	X	X	4/1/00 – 12/31/02	3	1
3	Notify ER and Ambulatory Surgery of data submission requirements.	X				1/1/01 – 12/31/02	.5	
3	Provide Training for ER and Ambulatory Surgery	X	X	X		11/1/01 – 12/31/02	3	
3	Finalize process/edits for ER and Ambulatory Surgery.	X	X	X		4/1/00 – 4/1/01	1	
3	Develop TPA for ER and Ambulatory Surgery.	X		X	X	4/1/01- 6/1/01	.5	.25
3	Enroll/Certify ER and Ambulatory Surgery	X		X	X	1/1/01 – 1/1/02	4	1
3	Support Data Submission/Error Correction for ER and Ambulatory	X	X	X	X	7/1/01 – 12/31/02	3	1

Phase	Task	OSHPD	DD&I	IV&V	Data Center	Date	OSHPD Program PYs	Data Center PYs
	Surgery.							
I	New Distribution Process/Procedures Documentation	**X**	**X**	**X**		1/1/00 – 6/30/00	1	.5
I	Data Mining/User Training	**X**	**X**		**X**	7/1/00 – 12/31/00	1	.5
All	On-Going User/Customer System Support	**X**			**X**	1/1/01 – 12/31/03	9	1
All	System Performance Reporting – Spec/Design/Testing	**X**	**X**	**X**	**X**	1/1/99 – 7/1/00	1.5	1
All	System Performance Analysis	**X**			**X**	7/1/00 – 12/31/03	1.75	.25
All	Regulation Development/Promulgation	**X**				1/1/99 – 12/31/03	2.5	
All	Legislation Analysis	**X**				1/1/99 – 12/31/03	1.25	
All	Health Data Standards (Initiatives / Participation)	**X**				1/1/99 – 12/31/03	1.25	

5.2.11 Training Plan

The use of new technologies, changes to organizational responsibilities, and business process changes will require significant training efforts on the part of the DD&I vendor. The DD&I vendor must submit a training plan for State review and approval prior to training material preparation or training implementation. This plan must assure that program staff are adequately trained to utilize the system and provide ongoing support as required by the DD&I solution proposal.

The DD&I vendor will be responsible for developing training materials for all MIRCal user interfaces and technical functions. The OSHPD Project Team will be responsible for reviewing and approving these deliverables prior to training.

5.2.12 On-Going Maintenance

On-going maintenance and operation of the MIRCal application will be provided through a combined effort between the DD&I vendor, under an on-going maintenance agreement for the application software, the Information Services Section of OSHPD and the State Data Center. The organizations will work together during the development and during operations of the application to assure that OSHPD and the State data center staff have a full understanding of the critical operational component of the system.

Availability of the MIRCal application is critical in order to meet the legislative mandates and provide timely feedback to the data submitters. The MIRCal application availability can be broken into three distinct areas:

- Collection: The Electronic Commerce Gateway or EDI Interface must be available 24 hours a day, 7 days a week (except for maintenance). This will enable submitters to send data any time day or night and have the data received, at a minimum, by the data center. OSHPD then has 15 days to turn around an acceptance or rejection and therefore processing time can be scheduled.
- Operations: In order to support normal business hours, the application must be made available to the users a minimum of 11 hours a day Monday-Friday.
- WEB Interface: Must be available 24 hours a day, 7 days a week (except for maintenance) so that submitters can supply data or so that data can be made available to data users.

5.2.13 Information Security

MIRCal's architecture defines a layered security approach. The design addresses access controls from both within and outside of MIRCal, for example third-party software packages. The first layer will be validation by the client operating system. Only upon validation will the operator be presented with the MIRCal icon. Second level of control is the use of a restrictive default database role. As such, the user would be

precluded from access outside of MIRCal. The third level is MIRCal user validation. Once MIRCal validates the user, they will be assigned the database role appropriate to their user role. As such, tables outside the scope of their authority would not be accessible.

Security for Web-based applications will use industry-standard secure socket layer (SSL).

5.2.14 Confidentiality

As MIRCal contains medical information of the public, confidentiality of information is paramount. To assure data confidentiality, OSHPD has implemented extensive guidelines governing the dissemination of information. OSHPD has defined two distinct categories of data: confidential and public. Confidential data, which contains patient identification, is released only upon appropriate justification and review. Public information is "de-identified", i.e. patient information is removed or masked (as in the case of birth date, which is converted to age). MIRCal will support the implementation of existing confidentiality rules by implementing confidential and public database views. Based on roles (as defined above) OSHPD may easily control the data elements to which a user or process has access.

5.2.15 Impact on Existing System

The existing Patient Discharge Data System and Activity System will be replaced by the MIRCal application over time. The first components to be replaced are the collection and cleansing components of the PDDS and the Activity system. These areas will remain operational through June 30, 2001 to allow for the last half of 1999 reporting period and can then be retired once the data is made available.

Data sets for reporting periods prior January 1, 2000 will still need to be made available by the existing system in order to meet custom data extract needs from data users or from the Activity System to follow-up on penalty processing.

5.2.16 Consistency With Overall Strategies

The strategic direction of OSHPD reflects the recommendations promulgated in the California Health Policy and Data Advisory Commission (CHPDAC), SB1109 report, "Improving Health Care Information for the Benefit of All Californians". CHPDAC's report identifies the following OSHPD stakeholders:

- California Consumers – Use OSHPD data to make informed decisions.
- Health Providers – Use OSHPD data to improve quality of care.
- Purchasers – Use OSHPD data to better determine value.
- Health Professionals and Researchers – Use OSHPD data to advance evidence-based medicine.

- Policy Makers – Use OSHPD data to safeguard the public's health.

The specific requirements identified in SB1973 are improved timeliness of data, the collection of outpatient data, and the maintenance of data accuracy for its intended uses. MIRCal is designed to meet the requirements of SB1973.

5.2.17 Impact of Current Infrastructure

MIRCal impacts not only the current information technology infrastructure, but also significantly changes the entire business operation. The current Patient Discharge System is extremely personnel intensive, and based on batch processing. In contrast, MIRCal is designed to minimize labor requirements.

MIRCal will involve the implementation of a number of new technologies for OSHPD:

- Client-server to replace batch reports and 3270 terminals. Client-server is the standard for most Agencies, and involves little risk.
- EDI to replace magnetic media. As is described elsewhere in this section, the State has little experience with EDI.

5.2.18 Impact on Data Center(s)

The existing patient discharge system is entirely mainframe based, whereas MIRCal will be a client-server environment using a UNIX database server. The approach is consistent with the strategic direction of the State data centers, and will not require any non-standard hardware or software.

The State data centers do not however have expertise in EDI environments. Discussions are currently underway between OSHPD, HWDC and Teale Data Center (TDC) to determine the best implementation approach. Other Agencies are in the procurement and/or implementation phase of EDI environments (e.g., DGS and DIR) and may achieve implementation prior to OSHPD.

5.2.19 Data Center Consolidation

MIRCal is consistent with the State's data center consolidation direction. OSHPD currently uses HWDC for all processing requirements, and will continue to utilize a State data center for MIRCal.

5.2.20 Backup and Operational Recovery

MIRCal differs from a typical information technology project in that it is not online transaction driven. There are not a large number of workstations connected entering data. Rather, data will be transmitted from the data providers in files and posted to the database. Automated processes will then evaluate data quality and transmit error messages to the data providers. Data analysts will provide manual intervention only in

cases that cannot be handled by the automated process. The following addresses the backup and operational recovery of each component:

Process	***Backup Requirements***	***Recovery Requirements***
1. EDI data capture – Data will be transmitted via the Internet to a mailbox located at a State data center. A process will scan the mailbox, log the transmission to the MIRCal database, strip the attachment data file, store the attachment in a backup directory, delete the mail message, and start the EDI translator. The translator will post the records to the MIRCal database.	The data will be maintained as a flat file on the mail server and backed up each night using standard operating system utilities. Once the EDI translator posts the data to the database, database backup and recovery procedures will apply (see data clean-up section).	If the mail server should suffer a critical failure (loss of data disk or corruption of mail file structure) data not yet processed by the scanning routine will be lost. Less critical failures require normal process and/or operating restarts with no loss of data. Once the scanning process runs (the process can run either continuously or at intervals at OSHPD discretion), the message will be logged in the MIRCal database.
2. Web Data Capture – Low volume data providers will have the option of using an OSHPD provided Web form to submit data.	Data received through the Web server will be posted immediately to the MIRCal database.	Database backup and recovery procedures will apply (see data clean-up section).
3. Data Clean-Up	All updates to the database will be logged using standard database management system (DBMS) utilities. The log file will be maintained on a different disk than the database. Backup of the entire database will be performed each day.	Using standard DBMS backup techniques, only uncommitted transactions can be lost. The MIRCal architecture describes a mechanism where a process log is maintained and only closed after the DBMS commit process successfully completes. This eliminates risk for batch processes. The operator will recognize failure of online transactions. Recovery of a corrupt database will be achieved by applying the previous night's backup, followed by the day's transaction log.
4. Data Distribution	Data distribution will be performed through the data warehouse, which will be implemented as another database instance. Database backup and recovery procedures will apply (see data clean-up section).	Database backup and recovery procedures will apply (see data clean-up section).

5.2.21 Sources of Funding

MIRCal implementation will be funded from the California Health Data and Planning Fund (CHDPF), a non-General Fund source. It is anticipated that, for FY 98/99, $990,500 will be appropriated from SB1973 for the implementation of this project

The Economic Analysis Worksheets (EAWs) of the proposed alternative system identifies the costs allocated to the various elements within the project. The Project Funding Plan Worksheet, included in Section 8 - Economic Analysis Worksheets of the FSR shows the source of funding to successfully complete the project.

5.3 Rationale for Selection

The proposed solution best meets the management objectives of OSHPD in addition to the legislative mandates as proposed in Senate Bill 1973. The rationale for selection is based on several business reasons including:

- The system provides for full compliance with the requirements of SB 1973. It provides for all basic functionality at the out set and allows for system expansion to accommodate Phase 2 and Phase 3 requirements with limited additional application software development.
- The application software development utilizes existing, proven Commercial Off the Shelf (COTS) for many of the components, limiting the amount of custom development and, therefore, risk associated with the development and integration effort.
- The proposed system architecture provides for structured or layer approach to the initial development and subsequent expansion of the MIRCal application. This approach allows for controlled development and testing processes minimizing the risk of failure of one component impacting another component.
- MIRCal proposes to utilize national standard data sets for the electronic transmission of patient discharge data. This approach coincides with the strategic direction and current effort of the data providers and their system vendors.
- The client / server architecture is consistent with the strategic direction of both ISS and the State data centers.
- The overall cost of developing, installing and operating the MIRCal system is lower than other alternatives evaluated.

5.4 Other Alternatives Considered

During the development of the Proposed Solution described above, Logicon explored many alternative approaches to providing for the system functionality to satisfy the comprehensive mandate of SB1973. Two of the alternatives are included in the EAWs included in Section 8.0, Economic Analysis Worksheets. They were to develop and provide for the functionality through the development and operation of a mainframe base application or to outsource the application development and on-going operation to a private organization. The rational for not recommending these alternatives is included below.

OSHPD conducted a detail survey of 18 other states with discharge data collection systems. Most states collecting discharge data use billing data as the primary source of patient discharge data. Only New York currently collects a unique non-billing discharge data format. The New York system collects a different set of discharge data, and collects it using the same techniques as are employed by OSHPD today. OSHPD will however, attempt to leverage the experience of other states by contracting with a vendor with experience in an equivalent system. For example, there are related data collection systems that employ very similar technology. The following sections provide the specifics regarding each evaluation.

5.4.1 Existing Method of Operation

The EAW for the current method of operation of the PDDS is included in the Existing System Cost Worksheet. The data has been compiled from the actual expenses incurred by the PDDS and the related costs of the Publication and Dissemination Section through December 31, 1997, and the estimated expenses to be incurred through June 30, 1998. The ISS staff costs and data center costs for continuing operations are actual cost. Personnel years (PY) have been calculated based on the average salary for the ISS staff.

The EAW for the existing system operation assumes that there will be little if any modifications made to the current processing system. The EAW is based on the assumption, however, that the PDDS will be required to comply with the mandates set forth in SB 1973. The following is an itemization of the mandates of SB 1973 and the proposed method for fulfilling each.

- Provide assistance to small and rural hospitals to automate the Patient Discharge Data (PDD) submission process – ISS staff and associated data center staff have been added to develop, distribute and support software which complies with SB 1973 requirements.
- Eliminate the submission of paper reports - $25,000 has been allocated to purchase equipment to improve the loading of PDD received on magnetic media on to the IBM mainframe. Data center costs have been increased by 10% over the prior year.

- Reduce the data review period for OSHPD from 6 months to 15 days – This requirement essentially multiplies the peak workload by a factor of 8.67 by reducing the turnaround time from 26 weeks to 3 weeks. The PDDS staff has been increase by from 24 to 104 beginning in the second half of FY 99/00 and then to 208 for FY 00/01. Data center costs have been increased by 10% over the prior year.
- Require on-line transmission of reports in formats consistent with national standards for the exchange of electronic information – Data providers will be required to utilize a commercial value added network (VAN) to submit data to OSHPD. The cost of the VAN is to be the responsibility of the submitter. One additional ISS staff is added to support the effort. The processing charges from the State Data Center have been increased by 30% over the prior year.
- Require each hospital Emergency Room and free standing Ambulatory Surgery center provider to submit data for services provide after 1/1/2002 – This change is estimated to increase the number of data records submitted each year from 3.6 million to 12 million. Program staff have been doubled to accommodate this additional workload.

As can be seen from the EAW the annual cost of operation under this scenario has increased to more than $7,000,000 the first year and then shows a compounded increase of seven million dollars each year. Since all staff members will be involved in the same data cleansing and distribution functions as today, there will be no staff available for transfer to “Value Added Services” as is the case under the proposed alternative. The total estimated cost of operation for the five-year period is $74,072,000. Obviously the current system is not capable of supporting the PDDS in the coming years.

5.4.2 Alternative 1 – Mainframe Solution

Alternative 1 provides the information system capabilities necessary to satisfy the objectives of OSHPD for the MIRCal system in an IBM mainframe environment. The Alternative System Cost Worksheet, Alternative 1,depicts the cost estimated for the design, development, implementation and subsequent operation of Alternative 1.

This alternative proposes to utilize the State Data Center mainframe environment instead of UNIX platforms. Clients would remain GUI-based as in the proposed alternative. The mainframe would host the following functions:

1. EDI Translation
2. Data Validation
3. Database Management

The only non-client application that might still require a non-mainframe system is the POP3 server.

The total cost of all activities for the five-year period is estimated to be $20,654,700.

The primary advantage to this approach is the familiarity of current ISS staff with the technology. Validation routines could be written in COBOL and maintained by programmers who are familiar with the business.

The primary disadvantages are two-fold: Cost of the environment and lack of flexibility. Many of the problems which plague the legacy COBOL environment would affect MIRCal as well, although the use of a RDBMS would reduce the problems associated with changes to data structures. The proposed solution's use of object-oriented programming significantly reduces development and long-term maintenance risk. This alternative will not continue to provide functionality into the future, nor will it support the demands on the department to provide information to support the effective and efficient delivery of healthcare to Californians.

5.4.3 Alternative 2 – Outsource Solution

Alternative 2 would provide the information system capabilities necessary to satisfy the objectives of OSHPD for the MIRCal system by contracting or "outsourcing" the system and program functions to a vendor experienced in processing and analyzing large amounts of healthcare related data. Alternative System Cost Worksheet, Alternative 2, depicts the cost estimated for the design, development, implementation and subsequent operation of Alternative 2.

This alternative is consistent with OSHPD's desire to devote its efforts to adding value and analysis to data, rather than expend efforts in the collection and cleaning of data. The alternative proposes that all collection and cleaning of data be performed by a third-party organization. This vendor would provide the following services:

1. Furnish and operate all hardware and operating system components
2. Build and maintain all MIRCal application code
3. Provide Help desk support to data providers
4. Establish Trading Partner Agreements, consistent with OSHPD policy
5. Hire program staff to resolve data validation questions
6. Supply OSHPD with a data base of accepted records for data analysis, publication and dissemination

Once the data is accepted per OSHPD quality assurance standards, the data would be send to OSHPD for loading into a data warehouse for distribution. All data base processing would be performed at a State Data Center.

The total cost of all activities for the five-year period is estimated to be $21,519,100. The estimate is based on an end-to-end cost of $.25 - $.40 per transaction (record), depending on the length of the contract. Transaction counts include discharge records, error records, and acknowledgement. Assuming a 20 percent error rate, the annual contract costs would exceed three million dollars.

The primary advantage to this alternative is requiring a vendor to be responsible for the operation and paying for services as opposed to providing the service. The selected vendor should be experienced in developing and operating software for an EDI environment. They would also have developed the infrastructure for implementing and supporting an EDI communications environment. Potential vendors include IBM's Advantis Network and Sterling Commerce's VAN Division.

In addition to being more costly, the primary disadvantage of this alternative is loss of control over this mission-critical operation. While OSHPD can contractually require the vendor to deliver MIRCal software at contract termination, the infrastructure requirements and operating knowledge surrounding the software would make it very difficult to change vendors should the need arise. Additionally, this solution cannot be leveraged by OSHPD to provide a convenient collection mechanism for other data collected by the department.

6 Project Management Plan

6.1 Purpose of Project Management Plan

This Project Management Plan (PMP) has been developed to provide The Office of Statewide Health Planning and Development (OSHPD) with the capability to oversee the successful completion of the Design, Development and Implementation (DD&I) of the Medical Information Reporting System for California (MIRCal). The functional capabilities of the system are described in Section 5.0, Proposed Solution, of this FSR. OSHPD has determined that it does not have the technical and staff resources to develop and install the proposed solution. Accordingly, OSHPD will utilize qualified private vendors to complete selected components of the project.

The MIRCal project has been divided into three phases to produce separable segments that provide standalone value if subsequent phases are terminated for any reason. This project plan focuses on the implementation of Phase 1. Accordingly, the first tasks in the Phase 1 project are to solicit and select qualified vendors to complete the DD&I and the IV&V components of the project.

The basis for the solicitation and subsequent statement of work negotiated with each vendor will be this FSR, as approved by the Health and Welfare Agency (Agency), and the supporting Concepts of Operation and Strategic Architecture documents. Vendors will be requested to bid their approach and costs for fulfilling the program and system requirements set forth in these documents. Each proposal will be evaluated to assure it provides for the MIRCal requirements while staying within the budget and schedule expectations of OSHPD. In addition, the DD&I proposal will be evaluated to ascertain that the bidder proposes to follow standards and procedures for all phases of the project which minimally comply with the published standards of the Department of Information Technology (DOIT). The successful IV&V vendor will propose industry standards and procedures that minimize the risk of the project failing to fulfill OSHPD established objectives.

Immediately following vendor selection and contract award, the PMP will be updated by the DD&I vendor to specify the approved standards and procedures to be utilized by the selected vendors. The OSHPD project manager will use the updated PMP to manage the successful completion of the project.

6.2 Scope of Project Activities

The PMP has been developed based on the Business Case and Proposed Solution set forth in this FSR. The updated PMP will define the project deliverables, the work packages producing those deliverables, schedule start and end dates and the estimated resources required to complete the DD&I tasks. The PMP is a dynamic document that will be updated to reflect significant changes during the life of the project. The PMP

must first be updated to reflect the actual statement of work negotiated with the DD&I and the IV&V vendors. Periodic updates are to be made to the Plan, as required, to reflect changes in project scope, duration or resources. Weekly updates to the project schedule, included in Section 6.8.5 - Project Schedule provide insight into project status including potential project delays and / or resource conflicts.

The updated Project Schedule should reflect the completion status of each deliverable or the achievement of project milestones. This activity tracking and update to the Project Schedule may not require updates to other elements of the PMP. The PMP, including weekly updates to the Project Schedule, should be maintained under version control.

6.3 Intended Audience

The updated PMP provides a clear and concise snapshot of the status of the MIRCal system at any point in time. It provides the Agency, DOIT, OSHPD, the State Data Center, the DD&I vendor and the IV&V vendor with a consistent view of the objectives and goals of the MIRCal project. On an on-going basis it shows project management the status of each deliverable to be developed, including the scheduled completion date and the resources estimated to complete the specified work packages. The PMP provides key input into the Risk Management System used to mitigate the effects of unforeseen events on successful project completion.

While the PMP is a detail plan and timeline to achieve the successful completion of the project, it is only one tool available to OSHPD and its development partner(s) to assure project success. Scheduled project review meetings, detail discussions, review and acceptance of project deliverables by responsible stakeholders, plus effective risk management all contribute to increasing the probability of the project being completed on time and within budgeted resources.

6.4 Project Manager Qualifications

The OSHPD project manager is responsible for overall project management. The project manager will be the primary interface between the project team and the other entities involved in the project. The project manager must be:

- Thoroughly familiar with the business requirements of OSHPD and its organizational capabilities.
- Experienced in managing sub-contracted development efforts.
- Capable of identifying key issues or concerns during the DD&I phase.
- Capable of directing the efficient resolution of issues.
- Capable of providing timely and accurate guidance and support to the OSHPD staff as well as the DD&I and IV&V vendors' management and staff, as required, to fulfill the stated objectives of the project.

The OSHPD project manager will be selected and assigned to the MIRCal project by

OSHPD / Agency management prior to the initiation of the MIRCal project development. A new senior level position for this purpose is included in SB 1973. Consultant services may be used to augment this position at critical points during implementation, project start-up and system rollout.

The DD&I vendor's project manager must be a senior level project manager experienced in the development and implementation of systems with characteristics similar to the proposed solution.

The IV&V vendor's project manager must be a senior level project manager experienced in the IV&V processes and procedures for overseeing the development and implementation of systems with characteristics similar to the proposed solution.

6.5 Project Management Methodology

6.5.1 Project Tracking

The objectives of the entire MIRCal project are set forth in this FSR, however, the focus of the Project Management Plan (PMP) is on Phase 1 of the project. OSHPD project management will utilize this PMP as the vehicle for tracking the status of the technical and managerial processes necessary to satisfy project objectives. OSHPD will require that the selected DD&I and IV&V vendors provide scheduled status reports for management and staff identifying the tasks for the period, including issues or questions that must be addressed or have been addressed since the last status review.

6.5.2 Project Meetings

Scheduled and ad hoc project status meetings provide an opportunity for all parties to understand project status, to discuss issues or concerns and to coordinate plans for upcoming reviews or other project activities. In addition, the DD&I vendor and the selected IV&V vendor will maintain regular communication with OSHPD and / or its stakeholders external to OSHPD, to clarify or identify information required for the completion of project deliverables.

6.5.3 Project Status Reports / Schedule Updates

To foster timely and meaningful communication among all project teams, a management status report will be submitted by the DD&I and IV&V vendors to the OSHPD project manager at regular intervals, not less than once per month and not more than once each week. If monthly intervals for written management status reports are defined, more frequent non-written status reports should be established. The report will include the following components:

- Summary of accomplishments.
- Key issues and / or questions and proposed tasking.

- Objectives for the coming period and proposed tasking.
- Updated Risk Management Plan , as required.
- Updated Project Schedule.
- Summary of hours and dollars by period and to date.

Written project status reports provide appropriate audit trails of project progress, including anticipated project problems. Weekly updates to the Project Schedule allow project members to anticipate and plan for project tasks and resource requirements, including identifying possible conflicts in resource availability.

6.5.4 Risk Management

Section 7, Risk Management Plan, of the Agency approved FSR, documents the processes and procedures that will be utilized to manage project risks. The initial assessment of project risks has been developed based on the DOIT Risk Assessment Model (RAM) and the Carnegie-Melon University's Software Engineering Institute (SEI) Risk Assessment Methods. While described in a separate section of the FSR, the Risk Management Plan is an integral component of the PMP. Proper execution of the PMP will provide early visibility into potential risks.

Incorporating risk mitigation functions into updates to the PMP provides management visibility of the resources required for risk mitigation and the on-going status of that endeavor.

6.5.5 Project Deliverables / Review

The project deliverables to be developed and submitted by the DD&I vendor to OSHPD for review and acceptance conform to the standard deliverables to be developed during the system development life cycle. The deliverables are listed in Figure 6-1 - Implementation Deliverables & Responsibilities. Time has been allocated in the project schedule for deliverable review, revision and acceptance. A minimum of three copies of each deliverable, plus an electronic copy, will be provided to OSPHD for their review and approval activity. The achievement of project milestones and completion of deliverables should be documented in writing to the OSHPD project manager.

The IV&V vendor performs critical risk assessment and verification & validation of all life cycle processes, reviews, and deliverables for both the Integration vendor and the State.

Figure 6-1 - Implementation Deliverables & Responsibilities

Integration Vendor Responsibilities	State Responsibilities
Concept Phase	
• System / Subsystem Specification (SSS)	Review Vendor Plans
• Project Management Plan (PMP)	Management Review (MR)
• Configuration Management Plan (CMP)	Approval of Vendor Plans
• Quality Assurance Plan (QAP)	
• Risk Plan	
Requirements Phase	
• System Requirements Specification (SRS)	Review Requirements Document
• Interface Requirements Specification (IRS)	System Requirements Review (SRR)
• Test Plans	Approved Requirements
Design Phase	
• System Design Document (SDD)	Review Vendor Design Document
• Interface Design Document (IDD)	Preliminary Design Review (PDR)
• Database Design Document (DBDD)	Approved to Proceed to Final Design
• System Test Plan (STP)	
• System User Manual (SUM)	
• Preliminary Design Review (PDR)	
Implementation Phase	
• Critical Design Review (CRD)	Critical Design Review (CDR)
• System Test Description (STD)	Review Vendors Test Documents
• Test Readiness Review (TRR)	Approved Test Descriptions or Scenarios
Test Phase	
• System Test Report (STR)	Results Review (RR) Approved Test Results
Installation and Checkout Phase	
• Transition Plan (TP)	System Acceptance Test
• System Acceptance Test	Functional Configuration Audit (FCA)
• Functional Configuration Audit (FCA)	Physical Configuration Audit (PCA)
• Physical Configuration Audit (PCA)	Conversion Acceptance

6.5.6 Project Implementation Schedule

The project schedule included in Section 6.8.5, Project Schedule, sets forth a high level schedule that must be met for the proposed solution to fulfill the mandated requirements of SB1973. This schedule will be updated by the DD&I vendor immediately following project initiation. The updated schedule will include adequate time for deliverable review, modification if required, and approval.

Of critical importance to the successful completion of the MIRCal project is the timely and thorough development and review of the process requirements specified in draft and final versions of design documents. Incomplete or inaccurate requirement specifications make timely project completion highly improbable. All review processes begin with a detail walkthrough of each deliverable. The walkthrough should be conducted by the developer and should include the responsible OSHPD management and staff and other project members, as appropriate. The walkthrough provides the basis for a clear understanding of the content of the deliverable and allows OSHPD staff the opportunity to quickly resolve questions or concerns with the product.

If revisions to deliverables are required, the description of the changes required must be provided in writing to the party responsible for the deliverables, within the designated review period. Approval of each deliverable by OSHPD should be in the form of an approval memo addressed to the party responsible for the deliverable.

6.6 Project Organization

Effective project management begins with the establishment of a project team committed to the achievement of the goals and objectives of the project. The project team should be comprised of a designated, qualified, Department project coordinator, representative(s) from executive management, Program operations, the Publication and Dissemination Section and the Information Services Section. Table 6-1 - OSHPD Project Team, illustrates the composition and responsibilities of the recommended OSHPD Project Team. The team organization presented below is intended to provide the skill sets and responsibility coverage necessary for project success. As OSHPD revises its organizational structure to meet the changing demands of the business, the classifications described below should be revised appropriately.

Successful achievement of the goals and objectives of any project is dependant on effective, timely and accurate communication among all members of the project team. This PMP is intended to facilitate that communication. The process model for managing the successful completion of the design and development tasks and the implementation of the Phase 1 elements of MIRCal will be delineated in the updated project schedule included in Section 6.8.5 - Project Schedule. This schedule identifies the timing and dependencies for major milestones, work activities, deliverable reviews and approvals.

Table 6-1 - OSHPD Project Team

Classification	Responsibilities
Project Coordinator	• Direct the ongoing project activities of the OSHPD Project Team • Participate in weekly Project Review Meeting • Report to Project Manager on project status and/or requests for scope, schedule, or budget change • Provide primary interface between the OSHPD and the State data center, the DD&I and IV&V vendors • Participate in deliverable walkthroughs • Review deliverable drafts and obtains final deliverable approval • Coordinate final system acceptance
OSHPD Management Representative	• Provide ongoing OSHPD management advise and direction, including deliverable development input • Participate in deliverable walkthroughs & project review meetings • Review project deliverables for Program compliance and fulfillment of OSHPD / Agency business requirements • Substitute point of contact for Project Coordinator
Business Analyst, ISS	• Provide OSHPD management advise and direction on matters related to policies and processes. • Provide ISS input in development of project deliverables • Participate in deliverable walkthroughs & project review meetings • Review selected deliverables • Participate in final system acceptance
Section Manager, PDDS	• Provide input as required to support deliverable development • Participate in deliverable walkthroughs & project review meetings • Provide required Section resources in support of project • Participate in final system acceptance
Assistant Manager, PDDS	• Provide information and support from PDDS analyst staff • Participate in deliverable walkthroughs & project review meetings • Review selected deliverables
Staff Services Analyst, PDDS	• Provide information and support from PDDS analyst staff • Participate in deliverable walkthroughs & project review meetings • Review selected deliverables
Lead Analyst, PDDS	• Provide information and support from PDDS analyst staff • Participate in deliverable walkthroughs & project review meetings • Review selected deliverables

Classification	Responsibilities
Network & Application Support Specialists ,ISS	• Provide input as required to support deliverable development • Participate in deliverable walkthroughs & project review meetings • Review selected deliverables
Section Manager, P & D	• Provide input as required to support deliverable development • Participate in deliverable walkthroughs & project review meetings • Provide required Section resources in support of project • Participate in final system acceptance

The project schedule focuses on the timely achievement of the development and implementation of automated procedures to satisfy the mandates and schedules set forth in SB 1973 and the objectives of OSHPD management for Phase 1. This timely achievement can only be accomplished by the full participation and cooperation of the designated management and staff of OSHPD, the DD&I vendor, the State Data Center and the IV&V vendor.

6.6.1 Organizational Structure

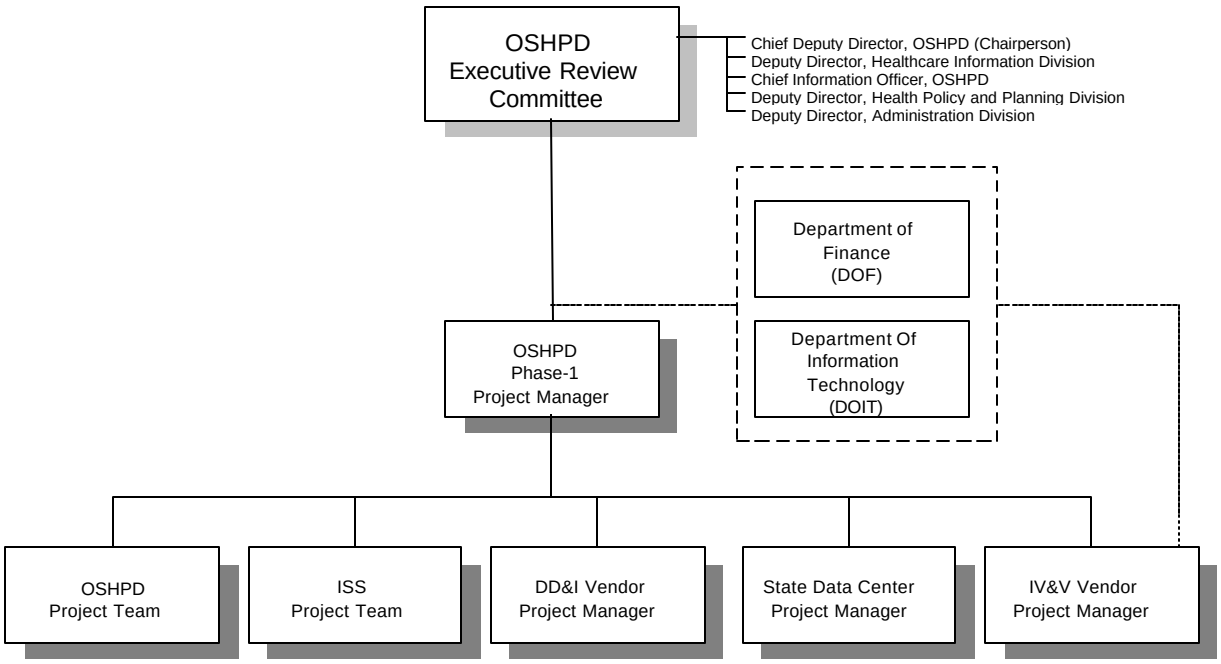
While the primary responsibility for the management of the day to day activities related to the MIRCal project rest with the OSHPD project manager, OSHPD executive management is ultimately accountable for the project's success or failure. To provide for proper executive management oversight and support, an Executive Review Committee should be established within the Office. The committee meets periodically (biweekly or monthly) to review project status and to review significant risk issues. The OSHPD project manager reports to the Executive Review Committee. The committee has the final authority to authorize changes to project scope, schedules or resources. The committee is chaired by the Chief Deputy Director, OSHPD and is comprised of the following members of Executive management:

- Chief Deputy Director, OSHPD (Chairperson)
- Deputy Director, Healthcare Information Division
- Chief Information Officer, OSHPD
- Deputy Director, Health Policy and Planning Division
- Deputy Director, Administration Division

Figure 6-2 - MIRCal Project Organization Chart, depicts the Executive Review Committee and its relationship to DOIT, DOF, the OSHPD project team, the ISS project team, the State data center, and the DD&I and IV&V vendors. The figure illustrates direct lines of communication using solid line indicators. Indirect reporting relationships for project IV&V activities, DOIT oversight and DOF review and approvals are indicated by a dotted line.

The EAW for the proposed solution, included in Section 8, Economic Analysis Worksheets, shows the total OSHPD Program and ISS staffing and an estimate of all identifiable cost items required to complete the development and implementation tasks for Phase 1 of the MIRCal project. The final staffing and costs associated with the DD&I and IV&V vendor responsibilities will be available for review following each contract award.

Figure 6-2 - MIRCal Project Organization Chart



6.6.2 Organizational Boundaries and Interfaces

The primary interface positions listed in the MIRCal Project Team Organization Chart for the Phase 1 project are the OSHPD Project Manager, OSHPD Project Coordinator, the ISS Technical Lead, the State Data Center Project Manager, the DD&I vendor Project Manager and the IV&V vendor Project Manager. The individuals to fill these positions will be identified prior to Phase 1 project initiation. The OSHPD project manager will be responsible for coordinating and / or authorizing communication with other State organizations, data providers and data users in support of this project. The OSHPD project manager also is responsible for authorizing any project schedule changes or modification to approved system specifications or functionality.

The State data center project manager is responsible for assuring that all tasks and support responsibilities of the data center are fulfilled as scheduled. The project manager is responsible for representing the data center in all matters related to the MIRCal project. The State data center project manager report directly to the OSHPD project manager.

The DD&I vendor is responsible for completing all tasks in accordance with the procurement agreement. The DD&I vendor reports directly to the OSHPD project manager.

The IV&V vendor will be responsible for completing all oversight activities in accordance with the statement of work negotiated during the vendor procurement process. The IV&V vendor will report directly to the OSHPD project manager and maintains a dotted line reporting relationship to the Executive Steering Committee.

6.7 Project Priorities

OSHPD executive and program management has established two primary objectives for MIRCal. The primary objective is to implement and operate a patient health data collection and analysis system that complies with the mandates and schedules set forth in SB 1973. Those mandates emphasize improving the timeliness of the public availability of patient discharge data.

The second objective is to improve the efficiency of program operations while focusing the OSHPD organization on utilizing collected and validated health data to improve the health care of Californians. OSHPD management has established the tasks set forth in this Phase 1 FSR as the priority needs of the department. The successful completion of the implementation of the system described in Section 5, Proposed Solution, provides the foundation for completion of Phases 2 & 3 of the MIRCal project that ultimately provide for full compliance with SB1973. The vision of management is that once the specified automated processes are in place, significant resources will be available to turn the department's primary focus to utilizing the wealth of information contained in the patient data to improve the health of Californians.

6.8 Project Plan

6.8.1 Project Scope

The Medical Information Reporting System for California (MIRCal) has been designed to satisfy the mandates set forth in California legislation SB1973, as well as the stated objectives of OSHPD management to improve the quality of its products and services. This bill, which is currently under legislative review, mandates specific improvements targeted at accelerating the collection and public disclosure of patient discharge data. The bill requires that OSHPD provide assistance to small and rural hospitals in automating their submission procedures. The bill further provides for specific changes in the reporting periods, the submission due dates and the time allocated to OSPHD for acceptance and dissemination of the data. The bill also specifies that all data be submitted via on-line processes for patient discharges on or after January 1, 2001. In addition, SB1973 expands patient health data reporting requirements to include services provided in hospital emergency rooms and free standing ambulatory surgery clinics in calendar year 2002.

Current OSHPD policies and procedures allow for a six month data reporting period, up to a six month hospital data preparation and submission period and a maximum six month OSHPD review / correction period. While much of the data is submitted by hospitals via electronic media, some small and rural hospitals submit data on hard copy reports. Significant rejection of data occurs for both electronic and hard copy submissions, requiring a costly iterative analysis, feedback and resubmission process. These policies and procedures combine to produce a significant delay in the public availability of quality data. This PMP, as updated following project initiation, describes the schedule and resources required to design, develop and test the systems and procedures necessary to fulfill the functional requirements set forth in Section 5.0, Proposed Solution.

6.8.2 Project Assumptions

Table 6-3 - Assumptions, Dependencies & Constraints sets forth the assumptions on which the project is based, the external events the project is dependent upon, and the constraints under which the project is to be conducted.

Table 6-3 - Assumptions, Dependencies & Constraints

Assumptions	**Description**
DD&I and IV&V vendor agreements are negotiated in a timely manner.	OSHPD must procure the services of a DD&I vendor within a three to five month period from FSR approval in order for the Phase 1 to be completed in a timely manner. The IV&V vendor should be selected immediately following FSR approval to support the development of the RFI for the DD&I vendor.
The DD&I vendor will accept the proposed solution and project schedule.	The selected DD&I vendor must agree that the system solution defined in Section 5.0, Proposed Solution, of the Agency approved FSR is achievable and can be completed in accordance with the project schedule included in Section 6.8.5, Project Schedule.
The data providers agree to support the transition to EDI	The hospital submitters must agree they can support the transition to the EDI submission of patient discharge data. The small and rural hospitals must agree that the WEB interface is a viable data entry submission vehicle.
The source and content of the data is not changed during Phase 1	OSHPD must assure the data set effective 1/1/99 does not change during Phase 1. Assuring the submission requirements for providers, and the resultant database available to the users and customers, remains constant minimizes the risk of impact on these entities and potential impact on the project.
Dependency	**Description**
SB 1973 is passed in to law essentially as drafted	Final passage of SB 1973 extends the sunset provisions for OSHPD and authorizes specific changes in OSHPD policy, procedures and funding basis.

Constraint	Description
Funding may limit the scope of the project	The funding authorized to support Phase 1 may limit the scope of the changes or resources available to support OSHPD in the successful completion of the MIRCal project.

6.8.3 Project Phasing

The proposed solution will be implemented in three project phases consistent with the timeframes and business requirements outlined in SB 1973. Project phasing will provide an orderly approach that will mitigate the risks associated with the major business and technology changes outlined in the proposed solution. The phases have been defined to allow each organizational entity impacted by the changes, ample time for planning, training and preparation for utilizing the enhanced capabilities of MIRCal.

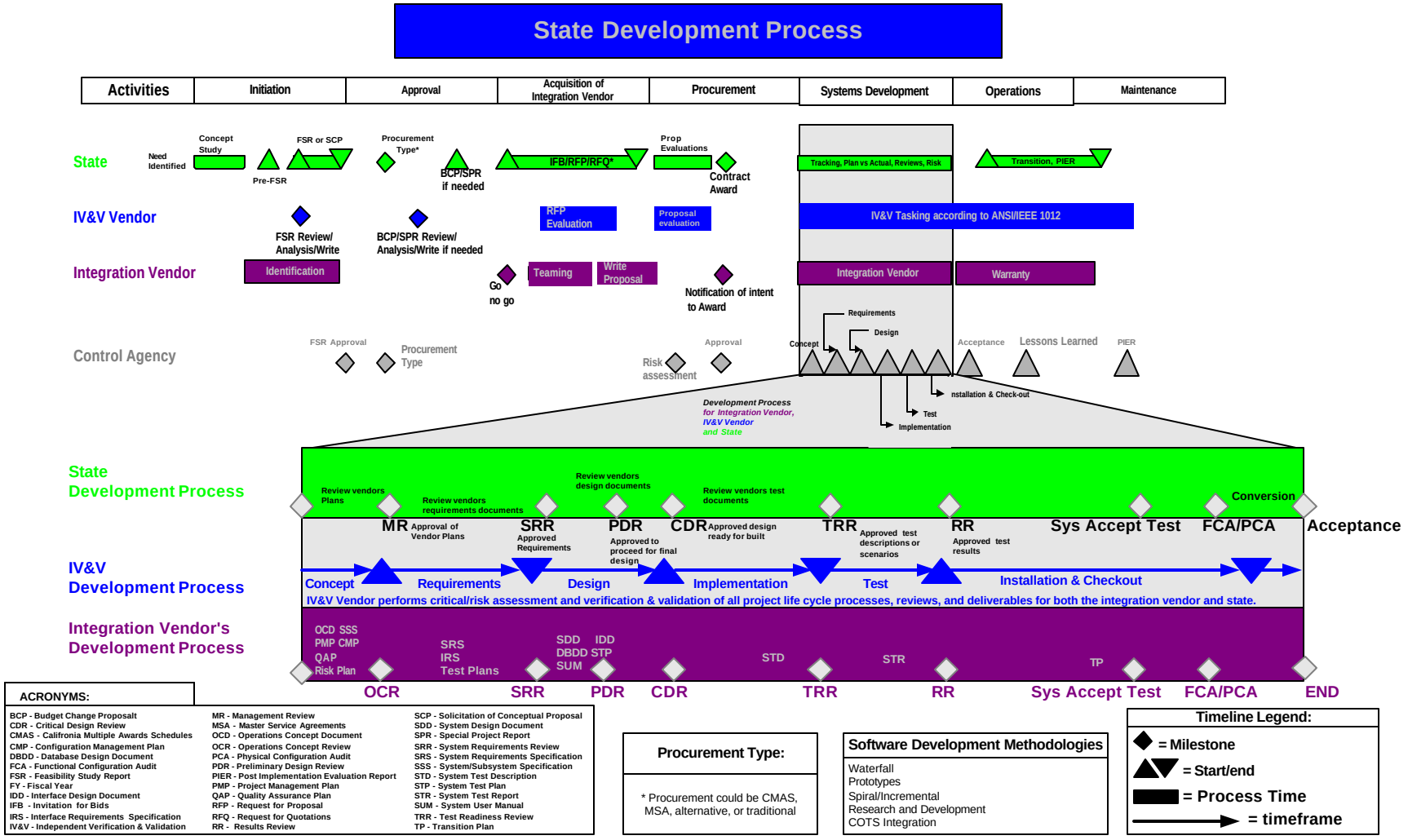
6.8.4 Roles and Responsibilities

Figure 6-3 – State Development Process is a graphical representation of the process steps that comprise the complete System Development Life Cycle. The figure depicts the structured responsibilities of the State (OSHPD), the IV&V vendor, the Integration (DD&I) vendor, and the State data center. The deliverables and milestones included in the process flow, together with the entity responsible for development, review and approval are shown in Figure 6-1 – Implementation Deliverables & Responsibilities.

The successful completion of Phase 1 requires a mix of skilled resources from the State, OSHPD management and key staff:

- Direct the development of required documentation to support the DD&I and IV&V vendor procurement process.
- Conduct the review and evaluation of submitted proposals and the ultimate award of the DD&I and IV&V service contracts.
- Define the functional and detail requirements that must be satisfied by the proposed solution.
- Actively participate in the review and acceptance of the deliverables developed by the DD&I vendor.
- Participate in the definition and execution of test scenarios to validate the system functionality and integrity.
- Direct the development or revision of policy and operational procedure manuals as required by the proposed solution.
- Accept the completed system.

Figure 6-5 - State Development Process



ACRONYMS:

BCP - Budget Change Proposalt
CDR - Critical Design Review
CMAS - Califronia Multiple Awards Schedules
CMP - Configuration Management Plan
DBDD - Database Design Document
FCA - Functional Configuration Audit
FSR - Feasibility Study Report
FY - Fiscal Year
IDD - Interface Design Document
IFB - Invitation for Bids
IRS - Interface Requirements Specification
IV&V - Independent Verification & Validation
MR - Management Review
MSA - Master Service Agreements
OCD - Operations Concept Document
OCR - Operations Concept Review
PCA - Physical Configuration Audit
PDR - Preliminary Design Review
PIER - Post Implementation Evaluation Report
PMP - Project Management Plan
QAP - Quality Assurance Plan
RFP - Request for Proposal
RFQ - Request for Quotations
RR - Results Review
SCP - Solicitation of Conceptual Proposal
SDD - System Design Document
SPR - Special Project Report
SRR - System Requirements Review
SRS - System Requirements Specification
SSS - System/Subsystem Specification
STD - System Test Description
STP - System Test Plan
STR - System Test Report
SUM - System User Manual
TRR - Test Readiness Review
TP - Transition Plan

Procurement Type:

* Procurement could be CMAS, MSA, alternative, or traditional

Software Development Methodologies

Waterfall
Prototypes
Spiral/Incremental
Research and Development
COTS Integration

Timeline Legend:

= Milestone
= Start/end
= Process Time
= timeframe

Table 6-1 - OSHPD Project Team lists the OSHPD key management and staff classifications and their responsibilities in support of the project. The anticipated OSHPD Program and ISS staff requirements to support the development and Implementation phases of the MIRCal project are set forth in the Alternative System Cost Worksheet for the Proposed Alternative included in Section 8, Economic Analysis Worksheets.

The DD&I vendor will be required to staff the project with a variety of management, clerical and technical staff. A senior project manager, experienced in the development and implementation of systems with characteristics comparable to the proposed solution, must be identified in the proposal and subsequently assigned to direct the efforts of the vendor staff. The technical staff required to complete the vendor's responsibilities is dependent upon the decision to build or buy the required system components.

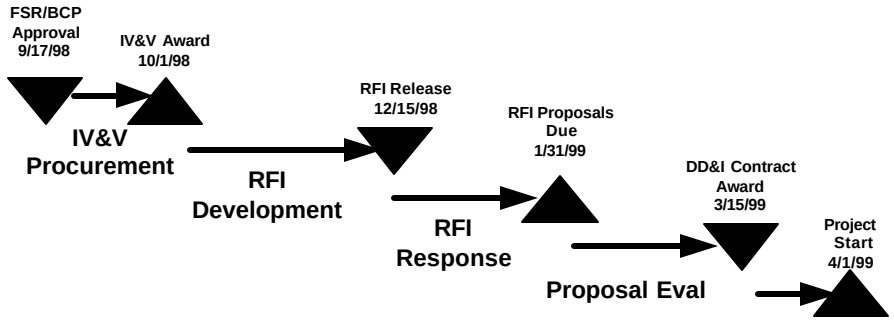
The IV&V vendor will be responsible for conducting oversight and validation of the activities and accomplishments of the project team. The IV&V vendor will ensure that all requirements are fulfilled and that the DD&I vendor meets all contractual obligations. The IV&V vendor must provide senior staff experienced in the IV&V processes and procedures for completing the DD&I tasks for projects similar to the proposed solution. All IV&V tasking and deliverables will be in accordance with ANSI/IEEE Std 1012-1986, IEEE Standard for Software Verification and Validation Plans.

Section 6.6 - Project Organization will be updated, as appropriate, following completion of the DD&I and IV&V vendor procurement process. The updated section will identify key management and organizational resources and their responsibilities within the project. The proposals submitted during the procurement process will detail the staffing needs for the various tasks negotiated in the final statement of work for each vendor.

6.8.5 Project Schedule

This Phase 1 FSR PMP includes all activities from the "Acquisition of Integration Vendor" phase through start-up of the "Operations" phase. Figure 6-4 – Phase 1 Vendor procurement Schedule describes the time frames estimated to complete the vendor procurement processes. The final project schedule and the resource requirements for completing each deliverable for Phase 1 will be determined by the final negotiated statement of work. The vendor will update the PMP to include these determinations. The OSHPD project manager will use the updated plan to manage the project through completion.

Figure 6-4 Phase 1 Vendor Procurement Schedule



The chart shown in Figure 6-5 – Project Schedule provides a high level schedule for the OSHPD management and the selected DD&I and IV&V vendors to follow for the timely completion of the project. The project schedule will be updated to reflect the approved detail plans of the two vendors and the resources required to fulfill their responsibilities. The updated schedule will be available to all project managers and will be reviewed on a weekly basis at the project status reviews. Progress toward achieving indicated milestones is shown as a percentage of completion in 25% increments.

The updated project schedule will identify work packages that are further decomposed into a work breakdown structure (WBS) for the identified project deliverables. The lowest level of decomposition is referred to as an activity and higher levels are referred to as activity groups. The numerical identifier for the work breakdown structure will be defined by the DD&I vendor. A description of the structure of the identifier will be provided with the updated project schedule. The identifier will allow the schedule user to relate a given activity to the work package and then the process or subsystem.

The updated Project Schedule shall depict the dependencies and inter-relationships among project activities. The dependencies are a key element in the development of a realistic and achievable schedule. The dependencies may be the relationship of the completion of one activity to another activity, or it could be caused by a conflict in the availability of a particular resource.

Concurrently with the initiation of the MIRCal Phase 1 activities, OSHPD is required to develop and receive required approvals for the FSR for Phase 2/3. In addition, an SPR for Phase 2 funding must be completed and submitted for appropriate approvals. Figure 6-6 - Phase 2/3 FSR & SPR Development Schedule illustrates the schedule of activities required to complete these processes by the required deadlines.

Figure 6-5 - Project Schedule

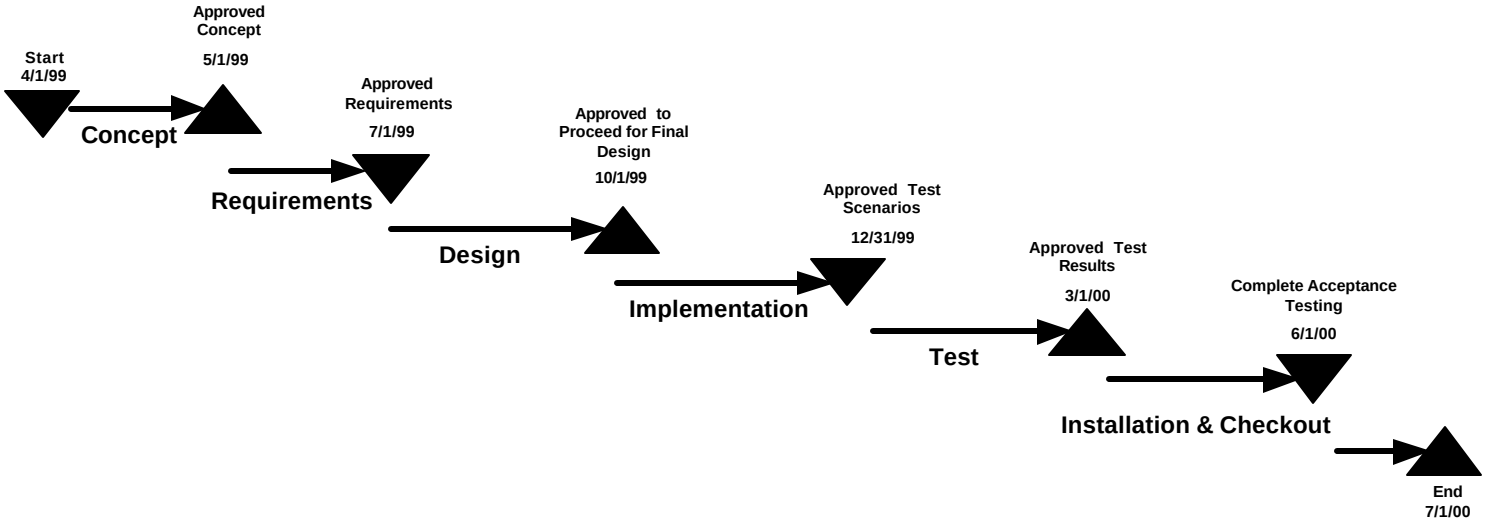
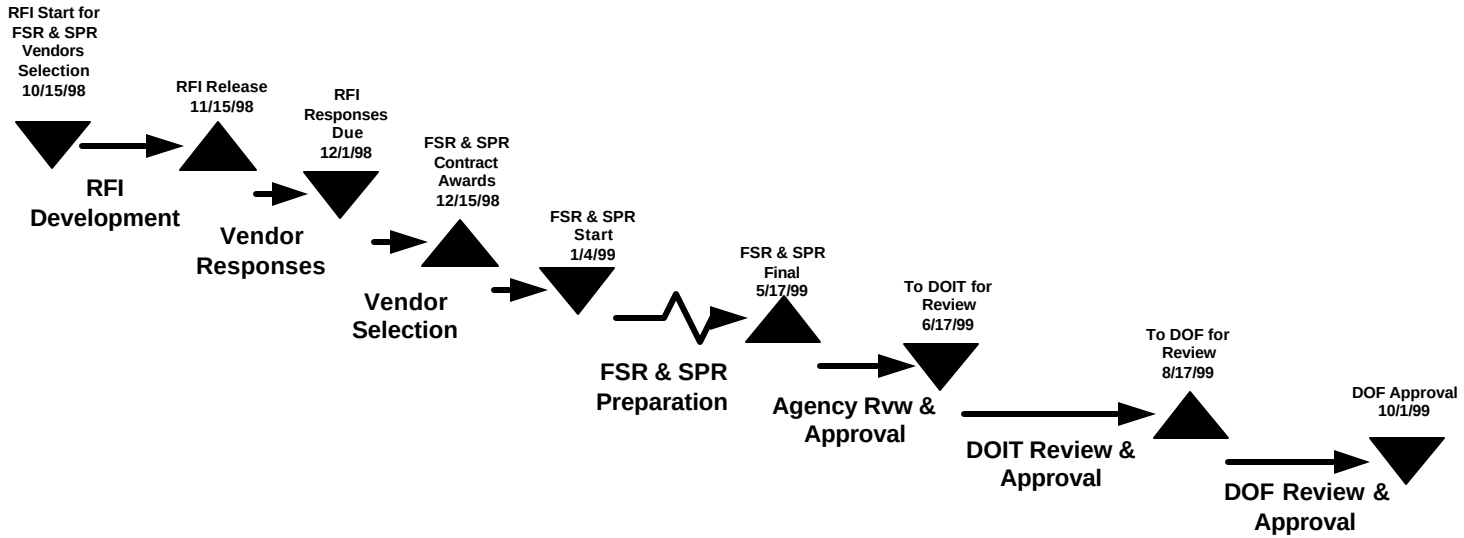


Figure 6-6 - Phase 2/3 FSR & SPR Development Schedule



6.9 Project Monitoring

Periodic status reports, with the contents as defined in Section 6.5.3, Project Status Reports / Schedule Updates, will be utilized for monitoring the status of project activities. The project schedule will be updated by the DD&I vendor and be available for distribution at the project status meeting. This schedule will minimally identify key activities, responsible resources or resource group, estimated start and finish dates, actual start and finish dates, and percent completion in 25% increments. A Gantt chart will be included and will list key dependencies identified to date. The DD&I project manager will minimally review project performance with the OSHPD project manager at least once a week. More frequent project reviews will be utilized only if circumstances warrant.

The initial Project Risk Assessment is included in Section 7, Risk Management Plan, of this FSR. The assessment includes proposed mitigation for each risk identified. Responsibility for applying the mitigation will be determined as soon as possible to maximize risk avoidance. Potential risks will be evaluated on a weekly basis to allow reporting of significant increases in risk, or avoidance of previously identified risks. Risk mitigation status will be included as an essential element of the weekly project review meeting.

All project deliverables will be subjected to in depth review to assure they fulfill the business needs of OSHPD. The review process is described in Section 6.5.5 - Project Deliverables / Review. OSHPD has determined that it will procure the services of an Independent Verification and Validation (IV&V) vendor to complete the IV&V responsibilities shown in Figure 6-4 – Phase 1 Vendor procurement Schedule. The IV&V vendor performs critical risk assessment of all project life cycle processes, reviews, and deliverables for both the DD&I vendor and the State. The approved IV&V plan, including required resources and project schedule dates will be included in the updated PMP following IV&V vendor contract award. All IV&V tasking and deliverables shall be in accordance with ANSI/IEEE Std 1012-1986.

6.10 Project Quality

The Project Management Methodology described in Section 6.5 - Project Management Methodology has been developed to assure the successful development and implementation of this Phase 2 project. The plan focuses on the continual and thorough review and acceptance of all deliverables, assuring the resultant product fulfills the stated objectives of OSHPD management of improving the timeliness and quality of data made available to its users and customers.

The deliverables and milestones set forth in Figure 6-1 – Implementation Deliverables & Responsibilities and the schedule of reviews and approvals depicted in Figure 6-6 - Phase 2/3 FSR & SPR Development Schedule comprise the software plan for the project. The software documentation shall meet industry standards for the documentation type. Since much of the software documentation may be obtained from

third party software or service providers, it is not practical to expect that all software will be documented to the same level of detail. All software documentation developed specifically for this project shall minimally meet the documentation standards established by DOIT.

The selected DD&I vendor will be responsible for developing and administering the Software Quality Assurance Plan and the Configuration Management Plan. The structure of the plans and the resources and time required to complete these plans will be included in the DD&I vendor proposal. The plans shall be developed in accordance with the appropriate ANSI/IEEE standards and the DOIT Project Management Methodology. The proposed schedule and resources required to develop the plans shall be included in the updated PMP following DD&I vendor contract award. The plans shall be delivered to OSHDP for review and approval in accordance with the updated project schedule. The IV&V vendor shall have responsibility for validating the plans and assuring that the procedures outlined in the plans are implemented and maintained for the life of the project.

6.11 Change Management

The basis for controlling and managing change during the term of the project is delineated in this PMP. The OSHPD project manager is responsible for authorizing any changes to previously approved project scope, resources or schedules. The deliverable development and review process, wherein OSHPD program and ISS managers and staff review and approve completed requirements documentation, assures the systems or automated processes to be developed will fulfill the business needs of OSHPD. The weekly review of the project status and the ongoing updating of the project schedule assure resources have been applied to identified changes and that the change will not impact scheduled project activities. Comprehensive test plans will be developed and executed to confirm that automated processes conform to functional requirement specifications. The test plans will exercise all system components to confirm their ability to interface and their inter-operability. The responsible party shall maintain all software documentation, delivered in support of this project, under version control. The DD&I vendor will be responsible for implementing an approved Change Control Procedures for the duration of the Phase 1 project. The structure of the Plan and the resources and time required to develop the Plan will be included in the DD&I vendor proposal. The Plan shall be developed in accordance with the appropriate ANSI/IEEE standards and the DOIT Project Management Methodology. The proposed schedule and resources required to develop the Plan shall be included in the updated PMP following DD&I vendor contract award. The Plan shall be delivered to OSHPD for review and approval in accordance with the updated project schedule.

The IV&V vendor shall have responsibility for validating the Plan and assuring that the procedures outlined in the Plan are implemented and maintained for the life of the project.

6.12 Authorization Required

This project requires FSR and funding approvals from the Department of Information Technology and the Technology Investment Review Unit, Department of Finance as stipulated by State information management policies governing project initiation and approval.

7 Risk Management Plan

7.1 Risk Management Approach

The risk management plan sets forth a discipline and environment for identifying, analyzing and responding to project risks. To be effective, risk management must be an integral part of the way projects are managed. The process that the project team will use to manage project risks should be defined in the planning stage and executed throughout the life of the project.

Risk identification consists of determining risks that are likely to affect the project and documenting the characteristics of those risks. No attempt should be made to identify all possible risks that might affect the project, but anything likely to occur should be included in the analysis. The risks documented in this FSR are a first level approach to risk identification for the project. The risk management plan is not a static document but an integrated piece of the project management plan. As the PMP is utilized to monitor project status, the risk management plan is used to manage and monitor risk.

An appropriate risk management approach should take into consideration the following processes.

- Risk Assessment: the process of identification, analysis, quantification, and prioritization of risks.
- Risk Response: the actions taken to manage risk, such as risk avoidance, risk acceptance, risk mitigation, risk sharing and independent project oversight.
- Risk Tracking and Control: the process of monitoring risks and risk response actions to ensure that risk events are actively dealt with.
- Risk Reserves: the resources (cost, time and staff) allocated to manage risks.

Risk identification begins in the early planning phase of the project. The DOIT Risk Assessment model and the Risk Management worksheet are beginning building blocks for the project risk management plan. They provide a framework for identifying and documenting project risks along with management factors to minimize risks. Risks are documented so that contingency measures can be taken to mitigate their effects. These documents will then be used to track and control risks and actions taken to effectively deal with the risk over the life of the project.

An identified risk should not necessarily be viewed in a negative light. All projects have associated risk. Identification, mitigation and management of risk factors lead to successful projects. Denial of risk and lack of mitigation and management can result in serious negative consequences.

7.2 Completed DOIT RAM Report

As part of this FSR development, the DOIT Risk Assessment Model software was utilized to derive the early risks for the MIRCal project. The following table illustrates the low risk scores for Strategic and Financial Risks.

Score	Risk Level	Risk Area
1.00	Low	Strategic Risk
1.33	Low	Financial Risk

The following is a listing of the questions presented and the answer supplied for the FSR DOIT Risk Assessment.

- To what degree is the project's purpose aligned with the agency's overall business strategy.

  Response: Project objectives have been clearly documented and can be linked to specific agency business objectives.

- To what extent is senior management committed to the project and its outcomes?

  Response: Senior management is fully committed and have openly endorsed the project.

- Are the cost/benefits clearly defined with a documented write-up?

  Response: Yes, a cost/benefit analysis has been performed by a qualified, experienced resource.

- Is there a clearly defined payback for this system?

  Response: There is a clearly defined payback and it is fully justified.

- What is the payback time for the project?

  Response: The payback period exceeds 2 years but less than 4 years.

7.3 Risk Management Worksheet

Table 7-1 - Risk Management Worksheet provides a display of risks identified to date, and the key attributes or characteristics for each. The risk categories and events shown in these worksheets represent those that can be identified here in the planning stages of the project. This worksheet will require assessment at project startup to include newly identified risks and/or updates.. The risk events will then need to be evaluated for the following:

- Loss Hours: Indicate the expected increase in hours that will occur if the risk event occurs. At this time, estimated hours are not accurate and therefor a scale of Low, Medium, High are used to categorize the loss hour potential.
- Probability: This field represents the chance that the event will occur.
- Risk Hours: This field represents the estimated risk for this event. The field is calculated by multiplying the loss and the probability fields, utilizing the values of one, two and three to represent the Loss Hour scale.

- Previous Risk Hours: This field represents the value of risk hours reported in the previous period. A difference between this value and the current risk hours indicates a change in the risk status and is used to alert management that a change has occurred. This field will be blank for the FSR.
- Preventative Measures/Contingency Plan: The next two columns document the planned preventive and contingency measures that could minimize the effect of the risk event. The list of Suggested Mitigation Strategies that follow the table will be used to address the events in these two columns.

Comments column should be used to document items such as a change in value of risk hours from the previous period, management actions needed to contain risk, and status of preventive and contingency plans.

Table 7-1 – Risk Management Worksheet

Risk Category/Event	Loss Hours	Probability (1 low – 10 high)	Risk Hours	Prev. Risk Hours	Preventative Measures/ Contingency Plan	Comments
Legislation Changes Occur That Impact Project Timeline or Scope	High	5	15	N/A	1, 12	None
EDI Resistance – Hospitals resist to participate in EDI.	Medium	6	12	N/A	4, 12	None
Change Management – Organizational change needs to be managed.	High	10	30	N/A	1, 2	None
Reinstating Edits – Current editing/validation may not be reinstated in new system as desired.	Medium	4	8	N/A	3, 4, 6, 8	None
Redirected Effort - Data Providers inefficiently utilize EDI technology and consume staff time with phone inquiries.	High	8	24	N/A	4, 7, 13	None
Complexity - Data editing and validation complexity requires additional hardware or interim manual steps.	Medium	6	12	N/A	3. 5, 6, 7, 11, 13	None
Security measures for data collection or distribution may have potential for being breached.	High	4	12	N/A	3, 5, 6, 8, 11	None
Opposition to WEB – Small and Rural facilities may oppose utilizing WEB interface for paper elimination process.	Low	4	4	N/A	4, 2, 12, 13	None

Risk Category/Event	Loss Hours	Probability (1 low – 10 high)	Risk Hours	Prev. Risk Hours	Preventative Measures/ Contingency Plan	Comments
Hospital Turnaround Time - Hospitals ability to return error corrections quick enough to make data available earlier.	Medium	8	16	N/A	4, 5, 9, 12, 13	None
OSHPD Staff Availability, primarily PDDS inability to make time available to support development activities while supporting on-going operations.	Medium	3	6	N/A	2, 3, 6	None
Political - Election based changes in management alter direction of project.	High	3	9	N/A	1, 12	None
Data Quality – Timeliness requirement imposes deadline for data delivery that could impact quality.	High	7	21	N/A	4, 12, 13	None
Not a Proven Solution – The integrated components of the proposed system are not currently in production in a state environment.	Low	5	5	N/A	3, 4, 5, 8, 11	None

7.4 Preventive Measures/Contingency Plan

Key actions are required to ensure the risk management plan performs its project function. Responsibility must be assigned to organizations and individuals for the desired mitigation activities. Measures must be determined to monitor the effectiveness of the risk mitigation activities

1. Development of Organizational Change Management Plan – A complete comprehensive Change Management Plan is required to address all impacts of the legislative requirements as well as the proposed solution.
2. Full involvement and support from OSHPD & HID division management – All levels of management must demonstrate commitment to the project.
3. Procurement of qualified and experienced vendors – An essential component of risk mitigation and project success is the right vendor. The procurement process should ensure selection of the vendor
4. Early communication with key interfaces (e.g. hospitals, data center).
5. Risk sharing with DD&I vendor.
6. Comprehensive requirements definition for system and all interfaces.
7. Extensive training process for personnel.
8. Full and complete testing methodology.
9. Develop detailed transition plan.
10. Phased implementation approach.
11. 'Layered' development approach allowing implementation of selected portions of the solution. This concept minimizes the impact to the organization.
12. Legislative approval of SB1973.
13. Development of comprehensive documentation for data providers.
14. Not a proven solution.
15. OHSPD staff availability and need for new skills.

8 Economic Analysis Worksheets

The Economic Analysis Worksheets (EAW) included in this section document the costs associated with:

- Existing System
- Proposed Alternative: Client Server / Database
- Alternative 1: IBM Mainframe System Environment
- Alternative 2: Outsource MIRCal Development and Processing

Also included are the Economic Analysis Summary and Project Funding Plan Worksheets. The Summary worksheet summarizes the cost and financial benefits of all costed alternatives for comparison purposes. The Funding Plan identifies the estimated resources needed to implement the proposed system, along with the anticipated funding methods and required budget actions.

A brief description of one-time and continuing costs for the existing system and each of the other alternatives is provided in Section 5.4 - Other Alternatives Considered. A detailed discussion of the costs and funding associated with the Proposed Alternative follows.

8.1 Proposed Alternative Economic Analysis Worksheet

The costs associated with implementing the proposed alternative, hereafter referred to as MIRCal, are provided in the (Proposed) Alternative System Cost Worksheet - "Client Server / Database". The total cost of all activities for the five-year period beginning in FY 1998/99 is estimated to be $16,242,100, including $7,425,800 in Information Technology costs for development and operation of MIRCal, and $8,816,300 in continuing existing IT and Program costs. MIRCal will yield a net benefit (cost avoidance) beginning in FY 1999/00. Of significant importance, HID program personnel will become available for "value added" services as the result of implementing MIRCal. An estimated six PYs are expected to be available by the end of FY2001/02 to augment MIRCal data analysis, marketing and distribution services.

The following is a discussion of the one-time and continuing costs for the design, development and implementation of MIRCal, the cost of continuing to operate under the existing system during the development and transition period, and the cost of operating under the MIRCal system through FY 2002/03. Except for the section "General Assumptions" the discussion follow the cost categories in the worksheet.

8.1.1 General Assumptions

- Proposed system costs include only the costs for implementation of the Phase 1 system. Costs for Phase 2 and 3 are not included and will be determined with the preparation of feasibility study report for each phase. However, the Phase 1 system is expected to include much of the functionality, if not the capacity,

required for Phase 2 (electronic data transfer) and (ER and ambulatory data reporting).

- Costs are based on current salaries and rates. Costs in future years do not include any cost of living increases.
- The Design, Development & Implementation (DD&I) vendor contract will be awarded by March 15, 1999, and the development project will begin on April 1, 1999.
- OSHPD will utilize either California Multiple Award Schedule (CMAS) or Master Services Agreement (MSA) to select the vendors for DD&I, project management (PM), and Independent Verification and Validation (IV&V). The PM and IV&V vendor will be selected by January 4, 1999. The DD&I vendor procurement process, to be conducted by OSHPD staff with the support of the PM and IV&V vendors, will commence following final authorization to proceed with Phase 2 and the selection of the IV&V vendor. The estimated start date for the procurement process is January 4, 1999.
- MIRCal must be operational on July 1, 2000. Patient discharge data for the reporting period January 1, 2000, through June 30, 2000, will be submitted during the period of July 1, 2000, and September 30, 2000. The data will be processed using the new system and related procedures. OSHPD will have 15 days to accept or reject the data following submission. OSHPD will have 15 days following acceptance to make the data available to public users. The 15 days are assumed to be business days.
- System development is costed from project initiation though June 30, 2000, when the system is required to be operational. Costs thereafter are considered continuing system costs related to operation and maintenance.
- The existing system will remain operational through December 31, 2000. During and for six months after MIRCal implementation period until December 30, 2000, OSHPD will continue to operate the existing system to process data for the final report period under the old system. As a result, resources will continue to be allocated to the old system until it can be fully phased out.

8.1.2 Information Technology (IT) Costs

One-Time Costs:

The total one-time development cost for the proposed Phase 1 system is $3,675,400 over the 18-month development period from January 1999 through June 2000. A summary of cost components that comprise the one-time development costs follows:

Staff – Staff costs include ISS personnel involved in the DD&I efforts. One full-time position appropriated in legislation will serve as the Project Manager (PMgr) beginning January 1998 through June 2000, then will transition into a lead technical

role of supporting the fully implemented system. However, the position is expected to resume the PM role for implementation of Phases 2 and 3. Existing system personnel will participate throughout the DD&I effort as member(s) of the project team. A business systems analyst will also be reassigned from other duties on a temporary basis to support the DD&I effort. Total one-time staff costs are estimated to be 4.1 PYs and $277,700.

Item	FY 98/99		FY 99/00		FY 00/01		Total	
Project Manager	.50	$37,300	1.00	$74,600	.5	$737,300	2.00	$149,200
Business Analyst	.25	17,700	.5	35,500	.25	17,700	1.00	70,900
Existing System Staff	.28	$14,600	.56	29,300	.25	13,000	1.09	56,900
Total	**1.03**	**69,700**	**2.06**	**$139,300**	**1.00**	**68,000**	**4.09**	**$277,000**

Hardware/Software – These costs include leased hardware and commercial-off-the-shelf software (COTS) to fully implement the proposed system. Total one-time hardware and software costs are $652,600.

Item	FY 98/99	FY 99/00	FY 00/01	FY 01-02	Total
Hardware – Lease including Maintenance	$22,400	$198,100			$220,500
Software – Purchase)	$97,600	$279,300			377,000
Software – Maintenance	6,800	48,400			55,100
Total	**$126,800**	**$525,800**	**$0**	**$0**	**$652,600**

All hardware and software costs are based on estimates developed by the Health and Welfare Data Center (HWDC) following discussions with OSHPD and Logicon. OSHPD proposes to lease all hardware and purchase all COTS software through HWDC. The hardware and software required to support the development environment will be installed in March 1999. Most remaining hardware and software will be installed in FY 1999/00, as required to support the implementation and operation phases of the project. The purchase cost of the software is included as one-time charges in the fiscal year it is installed. Software maintenance costs begin upon software installation. Hardware costs are based on the monthly lease cost (including maintenance), and begin upon equipment installation. All monthly hardware lease and hardware/software maintenance costs are included as one-time charges until June 30, 2000, when the system becomes operational.

Data Center Services - The cost of State Data Center support for the DD&I effort is estimated to total $430,400. An estimate of the required data center was developed by HWDC and includes: the cost of hardware/software installation and support, upgraded telecommunication services (to support Internet traffic between MIRCal data providers and HWDC and between HWDC and OSHPD), data center project coordination, and consultant services to perform tasks outlined in Section 5, Table 5.1 - MIRCal Roll-out Activities. Total one-time Data Center Services are $413,000.

Item	FY 98/99	FY 99/00	FY 00/01	FY 01-02	Total
System Installation	$25,600	$159,700			$185,400
Telecommunication Service	0	47,500			47,500
Project Coordination	12,600	50,400	12,600		75,600
Phase 1 Rollout Consulting		104,600			104,600
Total	**$38,200**	**$362,200**	**$12,600**	**$0**	**$413,000**

Contract Services - Contract services include the one-time custom software development integration and testing, which will be outsourced to a DD&I vendor. The estimated cost for the turnkey system is $1,408,600. An additional $50,000 is included to provide for the one time conversion of five years of prior year discharge data files. Consultant services are also required for preparation of a Request for Information (RFI) for DD&I vendor, project management to institute a standard PM methodology and train project staff, IV&V, and FSR development for Phases 2 and 3. Consultant services are categorized by fiscal year in the following table:

Item	FY 98/99	FY 99/00	FY 00/01	FY 01-02	Total
RFI for DD&I Vendor	$150,000				$150,000
DD&I	$300,000	$1,083,600	$75,000		$1,458,600
Project Management	$50,000	$75,000	$25,000		$150,000
IV&V	$50,000	$200,000	$50,000		$300,000
Phase 2 FSR	$75,000				$75,000
Phase 3 FSR	$150,000				$150,000
Total	**$775,000**	**$1,358,600**	**$150,000**	**$0**	**$2,283,600**

Agency Facilities - No new Agency Facilities are required to support the MIRCal development project.

Other – Other includes operation expenses and equipment costs for development staff based on 15% of Staff costs above.

Item	FY 98/99	FY 99/00	FY 00/01	FY 01-02	Total
Staff Overhead	$18,100	$20,900	$10,200		$49,200

Continuing Costs:

When the Phase 1 system is fully implemented, the total continuing costs for operation and maintenance will be $1,303,900 per year. The five-year continuing costs are $3,750,400. MIRCal operation and maintenance costs will begin July 1, 2000, and will increase to the expected amount in FY 2000/01, when all existing system resources are redirected to MIRCal support.

Staff – OSHPD staff required to maintain the Phase 1 system is 4.75 PY at $332,000 a year. ISS staffing consist of redirected positions from the old system in higher classification levels, and the project manager position added by legislation. The PMgr will transition into the lead technical specialist, coordinating system operation and maintenance activities involving HID, ISS, data center, and DD&I

vendor. Existing ISS staff / positions will be retrained or recruited to assume new operation maintenance roles, including database administration, application maintenance of the client-server and web-based application software components, data product development, help desk support and call tracking, and network / client administration. A summary of staffing requirement from the old system to MIRCal is summarized below. A description on ongoing system support activities is provided in Section 6 - System Operating Requirements, MIRCal Strategic Architecture.

Existing System		**MIRCal System**	
PY	**Current Position/Classification**	**PY**	**Proposed Position/Classification**
1.25	Assoc. Programmer Analyst Specialist – *implements programming changes and system enhancement*	1.00	Sr. Programmer Analyst Specialist – *coordinates operations and system maintenance activities and handles most complex system operations and maintenance problems and tasks*
1.50	Information Systems Technician – *performs data guidance tasks including job processing, input/output handling, production control*	1.00	Staff Programmer Analyst Specialist – serves *database administrator for test and production databases and data warehouse*
1.00	Key Data Operator – *transcribes data submitted by hospitals on forms to electronic format for processing*	1.75	Assoc. Programmer Analyst Specialist – *implement programming changes to Internet web-based and client-server application components, provides technical assistance to HID on the use of data analysis and reporting tools, and develop the most complex data products*
		1.00	Assoc. Information Systems Analyst Specialist – *augments help desk operations logging, resolving, tracking and/or dispatching calls from reporting facilities to responsible support entities including HID, ISS, data center and DD&I vendor; performs network administration to support client / server operations*
3.75	**Total PYs**	**4.75**	**Total PYs**

Hardware/Software - The ongoing hardware and software costs are $356,200 per year, and include the hardware lease costs and COTS software maintenance for all system components installed at a State data center and leased PC workstations for OSHPD MIRCal staff. The costs are based on estimated monthly lease/maintenance costs provided by HWDC.

Data Center Services - The cost of ongoing State data center support is estimated to be $376,900 per year, and include charges for upgraded telecommunication

services and ongoing system support for MIRCal hardware housed at a State data center. These costs are based on estimates provided by HWDC.

Contract Services - The DD&I vendor will be retained to provide EDI system maintenance, troubleshooting, and technical assistance, particularly after system implementation and on a continuing basis. The estimated cost for ongoing consultant services is $100,000 per year, beginning in FY 2000/01.

Agency Facilities - No new Agency Facilities are required to support the MIRCal on-going operations.

Other - The costs in this category include miscellaneous shipping and freight, miscellaneous supplies, and other non-specified costs related to system operation and maintenance computed at 25% of ongoing hardware/software costs. It also includes 15% of continuing staff costs for staff-related operating expenses and equipment costs. Total other costs are $138,800 per year.

8.1.3 Continuing Existing Costs

Information Technology Costs:

Staff - The ISS staff required to support the existing system will continue at current levels (less staff effort involved in the DD&I effort) through December 31, 2000. As processing under the existing system decreases, existing staff will transition to support MIRCal.

Other - This category includes all other costs associated with ongoing operation of the existing system, including data center processing and staff overhead. These costs will be redirected to MIRCal operations as the existing system is phased out.

Program Costs:

Staff - This includes the costs and PYs required for continuing HID program operations under the proposed MIRCal system. No changes in staffing requirements are anticipated as the result of implementation of the Phase 1 system. During implementation of MIRCal, at least 20% of the staff (4 PYs) will be directly involved in the DD&I effort, focusing on business-related tasks associated with the implementation of MIRCal, i.e., change internal business process changes, develop and promulgate new regulations; train hospitals on new reporting system, etc.

Other - This category includes all other program expenses associated with continuing program operations. No changes in ongoing operating expenses and equipment costs are anticipated.

8.1.4 Total Alternative Costs

These are the total costs and PYs required to support the MIRCal project development and implementation, the cost of continued operation of the existing system and the Program cost for operation under both MIRCal and the old system.

8.1.5 Increased Revenue

The program is not intended for revenue collection or cost recovery. However, revenues are collected through penalties assessed to hospitals for late data reporting and the sale of data products to the public. The revenues collected are minimal and recover the cost of these activities.

8.2 Project Funding Plan

The Project Funding Plan identifies the estimated resources needed to implement and operate MIRCal, how OSHPD will acquire the resources, and what necessary budget actions are anticipated during the systems expected useful life.

8.2.1 Project Funding Requirements

The total Information Technology cost of MIRCal is estimated to be $7,425,800 for the five-year period beginning FY1998/99. Total one-time costs are $3,675,400, and total continuing costs are $3,750,400.

8.2.2 Funding Methods

OSHPD proposes to fund the project through a several sources, including one-time legislative appropriation, redirection of existing budgeted resources and new funding. The following table identifies project funding from each of the methods.

Item	FY 98/99	FY 99/00	FY 00/01	FY 01-02	FY 02-03	Total
SB1973 Appropriation	$990.5					$990.5
Redirections:						
Existing IT	16.8	33.6	216.3	357.9	357.9	982.5
Other IT	20.4	40.8	20.4			$81.6
Existing Program						0
New Funds		2,332.4	1,146.7	946.0	946.0	5,371.2
Total Project Funds	**$1,027.7**	**$2,406.9**	**$1,383.4**	**$1,303.9**	**$1,303.9**	**$7,425.8**

Figures may be slightly off due to rounding.

Redirections:

Legislative Appropriation – SB 1973 includes $990,500 in FY 1998/99, a six-month one-time appropriation, beginning January 1, 1999, to initiate the project. The appropriation also includes one permanent, full-time IT position to manage the project and assume an ongoing lead technical specialist role upon system implementation.

Existing IT – OSHPD proposes to redirect all existing IT resources from support of the old system to MIRCal. The total redirection over the five-year period is $1,064,100.

Other IT – Existing IT staff outside the scope of this project will be redirected temporary, part-time basis to assist in the development effort. The total amount is 1 PY and $81,600.

Existing Program – No existing budgeted program costs will be redirected to IT to support the project. Although MIRCal will require fewer program staff than the old system, these staff will be redirected to expanded data analysis and distribution activities.

New Funds:

Additional funding of $5,297,200 will be is required over the five-year project period. No additional positions (PYs) are required.

8.2.3 Budget Actions Requiring DOF Approval

The budget action requiring DOF approval have been extracted from the Project Funding Plan and provided in the following table.

Item	FY 98/99	FY 99/00	FY 00/01	FY 01-02	FY 02-03	Total
Budget Actions Requiring DOF Approval:						
One-Time Costs	0	$2,332.4	-$2,112.0	-$220.4	0	$0
Continuing Costs	0	0	926.3	19.7	0	946.0
IT Reductions						0
Program Reductions						0
Total Budget Actions	$0	$2,332.4	-$1,185.7	-$200.7	$0	$946.0

OSHPD will request an increase of $2,332,400 in budgeted funds for FY 1998/99 to fund the development effort. The amount will decrease in each of the next two years by $2,112,000 in FY 2000/01 and $200,700 in FY 2001/02 until the required funding level of $1,303,900 for continuing MIRCal operations is reached. The net increase in budgeted funds is $946,000. No reductions in existing IT and program resources are anticipated.

8.2.4 Source of Funds

The project will be funded entirely from the California Health Data and Planning Fund (CHDPF), a special non-General Fund, which funds OSHPD's various health data and planning programs. CHDPF is sustained by annual assessments charged to licensed health care facilities based on a percentage of the annual gross operating expenses. The fund will be augmented with new assessments charged to hospitals and clinics to support the addition of Emergency Room and Ambulatory encounter data collection beginning in FY 2002/03, as proposed in SB 1973.